

Determinants of Gender Disparities in Financial Inclusion:
Insights from Tanzania

A Dissertation

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by
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For Women

Determinants of Gender Disparities in Financial Inclusion

Insights from Tanzania

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Abstract

This study uses a nationally representative sample of individuals from Finscope survey 2013 to empirically investigate the determinants of gender disparities in financial inclusion in Tanzania. Using logit regression, the study tests whether an individual's gender affects financial inclusion. Subsequently the study evaluates the relationship between individual's characteristics and the uptake of financial services and products by gender. The results provide evidence to suggest that gender disparities in financial inclusion are only prevalent in the uptake to formal savings and formal credit but not access to formal financial accounts and mobile money accounts. Being a woman decreases the likelihood of saving while increasing the likelihood of borrowing at a formal financial institution by 17% and 2% respectively.

Gender disparities in financial inclusion in Tanzania are caused by women being poorer, less educated, less employed, and more dependent than men. More women than men have no formal education hence decreasing their likelihood of accessing formal financial accounts by 58.4%. Employment is the strongest determinant increasing women's financial inclusion by 25% however fewer women are formally employed. While women have a higher propensity to save than men, they lack independence to make financial decisions, have lower financial and digital literacy and have lower mobile phone ownership to access mobile money accounts. The study recommends the Tanzania National Council for Financial Inclusion (TNCFI) to; incorporate gender targets in the financial sector and encourage gender mainstreaming in other sectors; and through engagement with other stakeholders, scale up informal financial services by integrating them with digital platforms to increase access to formal accounts. Finally, it is recommended that TNCFI boosts implementation of the National Financial Education Framework in efforts to increase women's financial capabilities and empower them to take up formal financial services.

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List of abbreviations

AFI	Alliance for Financial Inclusion
ASCAs	Accumulating savings and credit associations
ATM	Automated teller machines
BoT	Central Bank of Tanzania
CGAP	Consultative Group to Assist the Poor
CHF	Community Health Fund
DFS	Digital financial services
FII	Financial Inclusion Insights
FINCA	Foundation for International Community Assistance
FSDT	Financial Sector Deepening Trust
GDP	Gross domestic product
GMT	Graça Machel Trust
GSMA	Global Systems for Mobile Communications Association
LIC	Low income countries
MFI	Microfinance institutions
MNO	Mobile network operator
MSME	Micro, small and medium enterprises
NBFI	Non-bank financial institutions
NFIF	National Financial Inclusion Framework
NGO	Non-governmental Organisations
NIC	National Insurance Company
NSSF	National Social Security Fund
POS	Point of sale
PPF	Parastatal Pension Fund
PRIDE	Promotion of Rural Initiative and Development Enterprise
ROSCAs	Rotating Savings and Credit Associations
SACCOS	Savings and Credit Cooperative Organisations

SIDO	Small Industries Development Organisation
SDG	Sustainable Development Goals
T-bill	Treasury bill
TNCFI	Tanzania National Council for Financial Inclusion
TWDB	Tanzania Women's Development Bank
UNCDF	United Nations Capital Development Fund
VICOBAs	Village community banks
VSLAs	Village Savings and Loans Associations
WDF	Women Development Fund

Chapter One: Introduction

1.1 Background of the Study

Financial inclusion, being the pursuit of providing useful and affordable access to financial services to all individuals and businesses worldwide, was recognized as one of the main pillars of the global development agenda at the G20 Summit in Seoul in 2010 (Timermann & Gmehling, 2017). Financial inclusion allows individuals to make transactions, save value, access credit, and through insurance products, manage risks. While significant progress has been made in facilitating access to, and use of, formal financial services among underserved segments of society, the gender gap in financial inclusion persists.

This disproportionate exclusion of women in access to financial services is worrisome as it eliminates women's important contribution to economic development. The Global Financial Inclusion database (Global Findex, 2014) shows that, women make up 55% or 1.1 billion of the world's unbanked populations (Demirgüç-Kunt et al 2015). The authors show that although account bank account penetration increased by 13% for both men and women between 2011 and 2014, the gender gap remained at a steady 9% in developing countries (Demirgüç-Kunt et al., 2015, p. 4-5). A report by the Consultative Group to Assist the Poor shows that, for every 10 women and girls worldwide, four are excluded from the formal financial system (CGAP, 2017).

Financial inclusion for women and girls is regarded as a shared priority for both public and private sector stakeholder's due to the social and economic benefits of women's participation in the formal financial sector. From a micro perspective, when women have access to financial services, they spend more than men on food, education, and healthcare hence increasing the welfare and productivity of their families and communities (Chiapa et al 2016; Duflo, 2009; Prina, 2013). From a business perspective, reaching the underserved market with useful financial services that meet customer's needs through digital financial services, improves provider's revenues (GSMA, 2015). For banks and other financial service providers, full financial inclusion for women offers a more diversified and steady retail deposit base, as women are stronger savers than men (Landingham et al., 2015).

From a macroeconomic perspective, improving women's access to finance through formal financial services, including mobile money, contributes to inclusive and sustainable growth of economies. Research shows that women attach more weight to children's welfare, reinvesting up to 90% of their income in their families, compared to 30–40% by men, hence increasing income and education levels for their children and future generations (Doepke & Tertilt, 2014, p. 14). A report by (Manyika et al., 2016) from McKinsey global institute on powering inclusive growth through digital finance shows that, expanding financial inclusion for women results in greater labour force participation and increases Growth Domestic Product (GDP) growth. Further, Klugman & Tyson(2016) from UN Women show that, supporting digital and financial inclusion is a major enabler of women's economic opportunities which is key to achieving the United Nations Sustainable Development Goals (SDGs), specifically SDG 5, Gender Equality.

Significant opportunities in advancing women's financial inclusion through digital financial services exist, however, wide gender gaps in access to mobile money services persist. According to the Global Findex database, women around the world are 36% less likely to use mobile money services than their male counterparts (GSMA, 2017, p. 8). Digital financial services contribute to the G20 goal of increasing women's participation in the global economy by providing them with convenient and affordable financial services, which empowers them through greater control over their finances and financial decision making, thereby increasing women's labour force participation and improving the performance of women-owned businesses (Klapper & Dutt, 2016).

It is therefore important to empirically investigate the extent to which gender gaps manifest in the uptake of formal financial services, especially in developing economies where the gap is widest. Using gender disaggregate data is key to understanding factors that contribute to gender disparities in access to, and usage of, formal financial services and subsequently, contribute towards making policies for women's inclusion that are data driven and evidence based.

1.2 Problem Definition

The gender gap in access to, and usage of, formal financial services has been reported in Tanzania, and the regulatory authorities are keen to address it. However, there is lack of gender (sex) disaggregated data analysis to provide evidence based insights that will enable policy makers to address the gender gap effectively.

Tanzania is among the countries in Sub Saharan Africa (SSA) with encouraging progress in financial inclusion. However, women still fall behind men in accessing these important services. The World Bank economic update shows that although the proportion of women with access to financial accounts increased, a significant gender gap exists where 11% of women fall behind men (34% versus 45%) (World Bank Group, 2017).

Tanzania makes a persuasive case study to address the gender gap due to the following reasons. Firstly, Tanzania has been recognized globally for having one of the most conducive regulatory environments for financial inclusion, and a model environment for assessing the gender gap. The 2014 Global Microscope which assesses the regulatory environment for financial inclusion across 12 indicators and 55 countries reported Tanzania as the best country in Africa and ninth globally (The Economist Intelligence Unit, 2015. p. 16). Although gender specific targets were not included in the initial Tanzania National Financial Inclusion Framework (TNFIF) which covered a three-year period, 2013-2016, the revised measurement framework will include specific objectives to expand women's financial inclusion, making the country a model policy environment for this objective (Alliance for Financial Inclusion, 2016).

Secondly, Tanzania is one of the few developing countries in Africa with a comprehensive and reliable household database providing financial inclusion data broken down by sex. Analysis on sex disaggregated data has potential to uncover differences in the situations between men and women resulting from gender roles and expectations, thereby promoting evidence-based policy making (Landingham et al., 2015). Finscope nationally representative consumer surveys commissioned by Financial Sector Deepening Trust (FSDT) have been conducted in Tanzania since 2006 with follow ups in 2009 and 2013. The surveys provide demand side data comprising of information on demand for, and barriers to, accessing financial services which capture individual's demographics and financial capabilities such as respondent's gender, level of income,

education, employment status and location. Despite the richness of data, only a few studies have been done on it (Ellis, Lemma, & Rud, 2010).

Thirdly, gender equity has been identified as a national priority in reaching Tanzania's development Vision 2025 (United Republic of Tanzania, 1999, sec. 3.1). Although women in Tanzania own 54% of the 3.16 million micro, small and medium enterprises (MSME's) in the country which contribute to 27% of the country's Gross Domestic Product, women fall behind men in access to financial services (Financial Sector Deepening Trust, 2012). In 2016, The Graça Machel Trust (GMT) commissioned a survey on 664 entrepreneurs in East African countries; Tanzania, Kenya, Uganda, Rwanda and Burundi, to study challenges of women entrepreneurs. The study found that 71 percent of women entrepreneurs finance their start-ups from their own savings because they have no access to capital (Wanzala, 2017).

This study contributes to the literature on gender disparities in financial inclusion in several ways. Firstly, studies that investigated the gender gap in financial inclusion and how it is manifested in developing countries found similar and conflicting results hence suggesting the need for further research (Kairiza, Kiprono, & Magadzire, 2016; Ghosh & Vinod, 2017; Rajeev & Bhattacharjee, 2012; Rajeev, Vani, & Bhattacharjee, 2010). Secondly, most studies on the gender gap in financial inclusion are cross-country in nature (Aterido, Beck, & Iacovone, 2013; Demirgüç-Kunt, Klapper, & Singer, 2013; Fanta & Mutsonziwa, 2016). Cross country studies are limiting in that coefficients in pooled regression are driven by a few countries resulting in findings being skewed towards specific countries in the study group. This study is one of the earliest country level empirical research after the mobile money revolution in Tanzania, to investigate the determinants of gender disparities in access to, and uptake of, mobile money services.

1.3 Research Objectives and Hypothesis

The objective of this dissertation is to examine gender differences in access to, and usage of, financial services using Tanzania as a case study. This study will examine two questions.

1. Does gender affect financial inclusion?
2. What factors contribute to gender disparities in financial inclusion and how do these findings vary across different levels of income?

Based on the research questions, the following hypotheses will be examined;

H₁: There is a significant relationship between gender and financial inclusion

H₂: There is a significant relationship between age and women's financial inclusion

H₃: There is a significant relationship between level of income and women's financial inclusion

H₄: There is a significant relationship between level of education and women's financial inclusion

H₄: There is a significant relationship between employment and women's financial inclusion

Financial inclusion is proxied by four indicators being access to accounts at formal financial institutions, uptake of formal savings, uptake of formal credit, and uptake of mobile money services. Using logistic regression, this study investigates the impact of gender on financial inclusion and factors contributing to gender disparities in financial inclusion. Similar to Financial Inclusion insights, Gender gap in this study is defined as the difference between the percentage of men and women within the above financial indicators or measures of interest (InterMedia, 2016)

1.4 Justification of the Study

In order to improve financial inclusion and achieve the “universal financial access” goal by 2020, the World Bank recommends Tanzania to target the last mile customer - especially women and youth - by reducing the gender gap (World Bank Group, 2017, p. 45). Although financial inclusion for women was not clearly articulated as a policy goal in the country's 2013 National Financial Inclusion Framework (NFIF), over the last two years the framework has been evolving to support a more favorable financial environment for women (Alliance for Financial Inclusion, 2016). AFI's report indicates that, the Bank of Tanzania will introduce gender targets and indicators in the revised measurement framework, with a possibility of integrating gender issues into the updated National Financial Inclusion Framework 2019.

This study's analysis of gender disparities in access to, and take up of, financial services seeks to provide data-driven evidence that will contribute to the country's efforts to advance financial inclusion for women. Findings of this study will be relevant to the members of Tanzania's National Council for Financial Inclusion, a public-private partnership (PPP) of stakeholders which include; the Bank of Tanzania (the secretariat), the Financial Sector Deepening Trust (FSDT), development

partners, donors and philanthropists, regulatory authorities, ministries and government bodies, and financial institutions (Tanzania National Council for Financial Inclusion, 2014).

1.5 Organisation of Study

The dissertation is made up of five chapters which continue as follows. Chapter 2 includes several subtopics; first it provides an overview of the financial services industry in Tanzania detailing formal and informal financial services as well as the evolution of mobile money services. Then it discusses the theoretical backdrop on the linkage between gender and finance, followed by evidence on the interlinkage between financial inclusion and economic growth. Subsequently, analysis of recent literature on the gender gaps in financial inclusion, digital financial inclusion, and barriers to women's inclusion is discussed.

Chapter 3 of the study provides an overview of the research methodology describing how the regression model is estimated. Chapter 4 is dedicated to the presentation of descriptive statistics of the main financial inclusion indicators, barriers of financial inclusion, motivation for saving, as well as descriptive statistics of determinants of financial inclusion. The section that follows presents the main empirical findings from regression results. Chapter 5 concludes the study with a summary, conclusion, and finally provides policy recommendations and avenues for future research.

Chapter Two: Literature Review

2.1 Introduction

This chapter provides a review of the literature on financial inclusion with emphasis on gender disparities. The section begins with contextualizing the financial services sector in Tanzania. Formal, that is, bank and non-bank financial services, as well as informal financial services are discussed. This is followed by an exploration of links between gender and finance and related interlinkages between finance and development. A critical analysis of empirical literature on gender disparities in financial inclusion is presented where key findings, similarities, and differences in the studies are discussed. The analysis, based on both cross country and individual country analyses, seeks to highlight conflicting results on the significance of gender in financial inclusion. Determinants of mobile money financial services and barriers for women's financial inclusion are highlighted. The chapter concludes with a summary of the discussion of the literature review, findings, and the intentions of the study.

2.2 Tanzania at a Glance

With a population of 50 million as of 2016, Tanzania's real GDP has been growing at approximately 6-7% in the past decade (World Bank, 2017). The last census in the country was held in 2012 where population was estimated to grow at 2.7% annually (National Bureau of Statistics, 2013). Majority of Tanzanians (70%) live in rural areas and approximately 28.2% of the population lived below the poverty line in 2012, down from 34% in 2007 (Alliance for Financial Inclusion, 2016). Access to affordable financial services is therefore critical to the inclusion of many especially those in rural areas where access is limited,

2.3 Overview of the Financial Services Industry in Tanzania

Financial sector reforms in the early 1990's marked the genesis of efforts to increase access to financial services in Tanzania. The reforms aimed at reducing the role of the state in the economy. This opened doors for private sector development and Foreign Direct Investment inflows. In 1996, a comprehensive privatization program was launched and by 2003 most underperforming manufacturing and parastatals (including state owned banks) were restructured, liquidated, and privatized. The reforms resulted in strengthened supervision and regulation in the banking sector,

an increase in the number of foreign banks as well as a proliferation of the types of formal financial institutions (International Monetary Fund, 2016a). Between 1991 and 2013, the banking sector grew from 4 to 53 banking institutions with a network of 609 bank branches (Tanzania National Council for Financial Inclusion, 2014). According to the authors, during the same period, the insurance sector grew from one National Insurance Company (NIC) to 27 insurance companies; and the pension sector from 3 to 5 institutions. Further, capital markets were introduced in 1994 with the Dar es Salaam Stock Exchange registering 19 securities by 2014.

Tanzania launched the country's first National Financial Inclusion Framework in 2013 which serves as an evidence-driven guidance for future regulatory activity aiming to increase financial inclusion in the country. The framework's elaborate targets were achieving 50% formal access, 50% formal usage, 25% adult population with two weeks' worth of formal savings and 25% with electronic information systems and credit history by 2016 (Tanzania National Council for Financial Inclusion, 2014).

In working towards the financial inclusion targets, four core enablers were identified based on their contribution towards lowering financial inclusion barriers such as transaction costs, information asymmetry, and lack of collateral. These core enablers include; improved proximity to access points, safe and efficient payment infrastructure, improved individuals, and business profiles (credit history), and secure store of value to enable individuals access to credit, savings, insurance, and securities. Insurance, securities, pensions, and government payments were identified as drivers of the core enablers to achieve the primary national financial inclusion targets. To drive the primary targets, identified institutions were required to have the following number of individual adults in Tanzania; (25%) with any form of insurance, (25%) invested in securities and (10%) with active pension accounts (Tanzania National Council for Financial Inclusion, 2014). However, all prescribed targets were not gender specific.

Tanzania categorizes its financial system into formal and informal financial institutions depending on the legal framework governing the lenders and borrower's behaviour. Formal financial service providers are regulated or officially supervised by the Bank of Tanzania (BoT) while informal financial services are outside the scope of government oversight (Tanzania National Council for

Financial Inclusion, 2014). Table 1 below provides a classification of the financial institutions in Tanzania.

Table 1: Classification of Financial Institutions in Tanzania

Classification		Financial Institution	Main Act/ Regulations
Formal	Banks	Commercial Banks	Banking and Financial Institutions Act (BAFIA) of 1991
		Microfinance Banks	Banking and Financial Institutions Act (BAFIA) of 1991
		Development Finance Institutions	Banking and Financial Institutions Act (BAFIA) of 1991
	Non-Bank Financial Institutions (NBFIs)	Pension Funds	Parastatals Pensions Act 1978
		Insurance	Insurance Act of 2009
		Capital Markets	Capital Markets and Securities Act 1994
		Savings and Cooperative Societies (SACCOs)	Cooperatives Societies Act of 1991
		Micro Finance Institutions (MFIs)	Cooperative Societies Act of 1991 Banking and Financial Institutions Act (BAFIA) of 1991 Bank of Tanzania (BOT) Act of 1995
		Mobile Money Institutions	National Payment System Act of 2015
		Remittance companies	Banking and Financial Institutions Act (BAFIA) of 1991
	Informal Institutions	Rotating Savings and Credit Associations (ROSCAs), Village Savings and Loans Association (VSLAs) Village community banks (VICOBAs), Employers savings groups	

Source: Finscope 2013(FSDT, 2014b), Tanzania National Financial Inclusion Framework (TNFI, 2014), Bank of Tanzania (2015)

2.4 Formal Financial Institutions

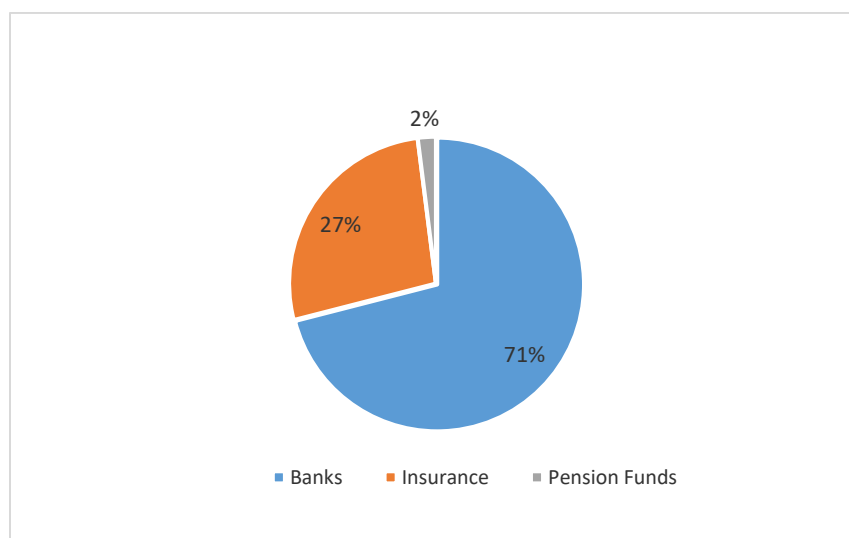
As seen on Table 1 above, formal financial institutions in Tanzania comprise of banks and non-bank financial institutions. Banks receive deposits from the public which are payable upon demand or after a fixed period of time (United Republic of Tanzania, 2014). Non-bank financial institutions (NBFIs) on the other hand, do not have a full banking license however, they facilitate alternatives

to bank-related activities such as investments, risk pooling, financial consulting, brokering, check cashing, and money transmission (World Bank, 2017).

NBFIs can serve as a competition or allies to banks by specialising in sectors or groups and providing services that are not necessarily suited to banks such as microcredit, microinsurance, and mobile money services. Table 1 above lists examples of non-bank financial institutions in Tanzania which include insurance companies, pension funds, microfinance institutions (MFIs), savings and credit cooperatives organisations (SACCOs), capital markets, mobile money providers, as well as remittance and transfer companies such as Western Union and MoneyGram. Although they can be competitors, banks and NBFIs such as mobile network operators collaborate in advancing financial inclusion and there is a business case for such partnerships (GSMA, 2015).

Tanzania's financial market is dominated by the banking sector which accounts for 71% of total financial assets. Pension funds and the insurance sector account for 27% and 2% respectively, while only 0.1% comes from collective investment schemes, that is, pooled money invested in bonds, stocks, or property (International Monetary Fund, 2016b). Since the proportion of collective investment schemes is too small, it is not presented in the Figure 1 below.

Figure 1: Landscape of Financial Services in Tanzania



Source: World Bank Report, 2017

Although financial sector reforms have contributed to increasing the number of players in the industry, Tanzania's financial depth, which is a measure of the country's financial sector assets

relative to GDP, is very low (43% in 2015) (World Bank Group, 2017). In their study, Cihak et al., (2012) show that a country's financial depth, also proxied as a ratio of private sector lending to GDP, is strongly correlated with income levels and has strong statistical links with long term economic growth and poverty reduction. Tanzania's ratio of private sector lending to GDP stood at 17.1% in 2015, well behind comparator countries such as Kenya which stood at 36%, and Sub-Saharan Africa countries which average 20% (World Bank Group, 2017).

2.4.1 Banks

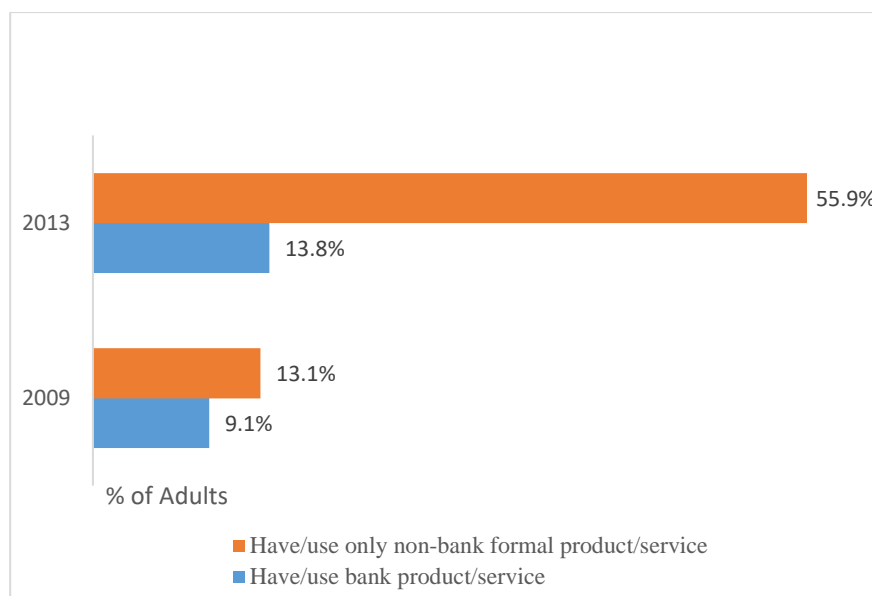
Tanzania's banking sector is comprised of the Bank of Tanzania, which is the regulatory authority, and 56 banking institutions of which 36 are fully fledged commercial banks, 12 community banks, 3 financial institutions, 2 Development Finance Institutions and 3 deposit taking microfinance banks (Bank of Tanzania, 2015). Approximately half of the banks' assets are fully funded by customer deposits which stood at a ratio of 85.8% by June 2016 (World Bank Group, 2017). However, this feature is not exclusive to Tanzania as other Low-Income Countries (LICs) are similarly characterized. (International Monetary Fund, 2016a).

The backbone of global economies financial intermediation is bank credit. However, Tanzania is constrained by limited access to long-term credit. By April 2016, only close to 1.2 million individuals (about 2% of the population) and 34,007 companies had borrowed from banks (World Bank Group, 2017). Reasons for scarcity of credit in the country include the small asset size of the banking sector, lack of sufficient competition in the sector and the nature of bank activities and their involvement in the economy.

Banks in Tanzania are mostly involved in collecting short term deposits and contracting short term loans to relatively low risk borrowers such as large enterprises and the government. Funding only short-term consumption for individuals and short term working capital for enterprises limits the bank's profit margins and contribute to high costs of lending. Additionally, the government T-bill rate in Tanzania is determined by a few large banks which buy government bonds for high interest rates ranging from 14 to 15 percent (World Bank Group, 2017). The nearly risk-free rate of government Treasury bills, sets a very high base for all other interest rates in the economy.

These features limit the growth of financial inclusion in Tanzania and can be divided into two categories. Supply side barriers are those resulting from providers of financial institutions while demand side barriers result from customers. Supply side barriers range from high interest rates, inappropriate services that do not meet the demand side (client's) needs, and high costs caused by inefficiencies in the system (Tanzania National Council for Financial Inclusion, 2014). Further, demand side barriers include customer's irregular income patterns, low levels of financial literacy as well as information asymmetry resulting from lack of credit bureaus. On the other hand, regulatory barriers have been identified as delays in rolling out national identification and stringent Know-Your-Customer (KYC) requirements.

Figure 2: Uptake of bank and non-bank financial services by individuals



Source: Finscope Survey Report 2013 (Financial Sector Deepening Trust, 2014).

Figure 2 above shows the growth in the proportion of individuals in Tanzania who have or use banking services from 9% of the adult population in 2009 to 13.8% in 2013. The increase in uptake of banking services during that period was minimal compared to the increase in uptake of non-bank financial services. Banks are limited in their geographical reach due to their brick and mortar infrastructure. Tanzania's population is highly dispersed with 70% of the population living in rural areas hence posing a greater challenge for access to banks.

According to the Finscope surveys, supply side factors that lead to the growth in the banking sector include a combination of new banks entering the market, increase in bank branches, the introduction of automated teller machines (ATMs) and increase in the range of services offered by banks (Financial Sector Deepening Trust, 2014). Demand side factors reported to have contributed to this progress is increase in uptake by 30-year old and younger males found in urban areas. Although the number of women with access to banking services increased from 7% to 10.1% between 2009 and 2013, the gender gap in access to banking services also increased from 3.5% to 7.8% (Financial Sector Deepening Trust, 2014).

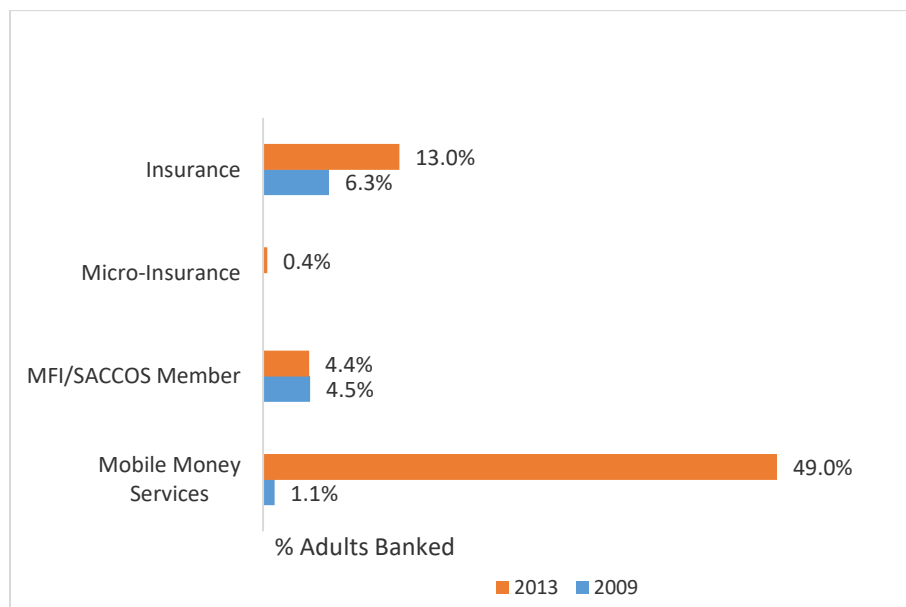
Asset ownership is an important issue impacting women's access to financial services and although Tanzania has made progress in addressing barriers of women's financial inclusion, more needs to be done (Alliance for Financial Inclusion, 2016). The government of Tanzania took steps to address gender disparities in land ownership by adjusting its legal requirements and introducing co-titling in land ownership (Mhango, Malima, & Lukumay, 2014). The author shows that The Land Act 1999 gives Tanzanian women the right to access land, as well as to own and sell it. The Land Act also mandates a joint titling of land while the 2004 amendment gives women the right to mortgage land which can enable them to have collateral for commercial loans. AFI reports that the BoT is continuing in spearheading efforts to introduce movable collateral regimes which offer prospects for increasing women's financial inclusion as it is an alternative to traditional collateral.

In efforts to increase financial inclusion for women, the central bank established Tanzania Women's Development Bank (TWDB) in 2009 with 75% of their customer base being women (Tanzania Invest, 2015). The bank addresses barriers that small to medium scale women entrepreneurs face in accessing finance such as lack of collateral to access loans, saving opportunities and loans to enhance their working capital. Despite improvements in uptake of banking services, more needs to be done in order to increase women's access to these formal accounts (Alliance for Financial Inclusion, 2016). The AFI recommended that the central bank expand their database to include sex-disaggregated data which will allow the bank to make better informed decisions to reduce the gender gap.

2.4.2 Non-Bank Financial Institutions

As Figure 2 above depicts, the surge in uptake of formal financial services from 13.1% in 2009 to 55.9% in 2013 was mainly driven by uptake of non-bank financial products or services. Figure 3 below shows how the sharp increase in the use of non-bank financial services was mainly driven by the increase in uptake of mobile money services. The use of mobile money services shot from only 1.1% in 2009 to 49% in 2013. Subsection 2.4.3 that follows, covers the evolution of mobile money services in Tanzania. Although not as high as the increase in usage of mobile money services, Figure 3 indicates that the increase in usage of insurance services was among the main contributors of growth of the non-bank financial services, followed by Micro Finance Institutions (MFI), and micro-insurance.

Figure 3: Trends in use of non-bank financial services



Source: Finscope Survey Report 2013 (Financial Sector Deepening Trust, 2014).

i) Insurance companies

The Tanzania National Financial Inclusion Framework targeted 25% of Tanzanians to have access to formal insurance by 2016 (Tanzania National Council for Financial Inclusion, 2014, p. 24). Figure 3 above shows, uptake of insurance services increased substantially from 6.3% to 13% of the population by 2013, almost double the 2009 levels. According to the Finscope report, health

insurance covers contributed to the bulk of the increase which was attributed by growth in private and government health funds. Both the National Health Insurance Fund - mandatory for public servants, and the Community Health Fund (CHF) - the largest government voluntary health scheme operating in rural areas, contributed to this growth. Other schemes include those offered through National Social Security Funds (NSSF), where uptake is mandatory for private and parastatal employees, as well as voluntary private health insurance schemes (Financial Sector Deepening Trust, 2015b).

The government of Tanzania intends to adopt sustainable development goal of “universal health coverage” and table a bill for compulsory national insurance for all before 2020 as part of a plan to finance affordable health services for all (Haraka, 2017). This initiative will require individuals from formal and informal sector to take up insurance cover that will be subsidized by the government according to individual’s earnings and other criteria. The financial pooling from all individuals will allow them to avoid out of pocket expenditure in times of need.

In the current situation, only formally employed individuals have compulsory health cover. However, fewer women than men are employed in the formal sector. Tanzania’s Employment and Earnings Survey of 2001 shows the ratio of women to men in formal employment is 0.41 (Ellis, Blackden, Cutura, MacCulloch, & Seebens, 2007). Further, the government’s commitment to health cover is still very limited. Although it is a commendable move that will save lives especially in preventing maternal and child deaths, there are several challenges still in the health care supply side in Tanzania.

ii.) Microinsurance services

Microinsurance provides insurance services to the low-income segment of society, majority of whom are women, to help them manage shocks and emergency expenses. Figure 3 shows that by 2013, the microinsurance sector only catered for 0.4% of Tanzania’s adult population. Microinsurance schemes operate across the country, although their coverage is low and their sustainability is a concern (Kuwawenaruwa & Borghi, 2012). However, the microinsurance industry is growing in Tanzania as more insurers realise the business opportunity presented by more inclusive insurance products. By 2015, 6 active insurance companies offered microinsurance products such as life, hospital, and simple funeral insurance, covering 18% of the adult population,

a substantial increase from the 2013 figures (Financial Sector Deepening Trust, 2015b). Women can access microinsurance services through their membership in Microfinance institutions and women banking institutions that are starting to provide such services.

iv.) Microfinance Institutions

Microfinance institutions (MFIs) provide financial services such as loans which are backed by social collateral to poor entrepreneurs whose incomes originate mostly from informal economic activities (Postelnicu & Hermes, 2013). In this model, the authors show, group lending requiring joint liability provides an effective instrument to avoid information asymmetries, as it incentivizes group members to use their social ties to screen, monitor, and enforce loan repayment on their peers. In their study to assess the impact of government schemes to support group lending institutions in Tanzania, Masele et al, (2015) examined the role of the government's support to Small Industries Development Organisations (SIDO) through the National Entrepreneurship Development Fund between 1994 and 2014. The study found that the schemes contributed in empowering 52.45% of women loan recipients who used the funds in entrepreneurial business activities which improved their livelihood.

The number of Microfinance Institutions has increased in Tanzania. By 2013 there were 170 Microfinance companies and credit-only non-governmental organisations (NGOs) (Tanzania National Council for Financial Inclusion, 2014). The Promotion of Rural Initiative and Development Enterprise (PRIDE) is among the largest credit NGOs in Tanzania providing an average of USD 374 credit facilities to over 100,000 small and micro entrepreneurs in the country. The Foundation for International Community Assistance (FINCA) Microfinance Bank and BRAC, the world's largest NGO with over 6 million women clients in Bangladesh, is also operating in Tanzania (Ellis et al, 2007, p. 65). The Tanzania Postal Savings Bank and several commercial banks (National Microfinance Bank, CRDB Bank, and Akiba Commercial Bank) also provide microfinance services.

Despite the number of MFIs in Tanzania, micro credit in the country is still limited. Potential exists to include more women in these formal financial institutions. Figure 3 shows access to MFIs and SACCOs members decreased from 4.5% in 2009 to 4.4% of the Tanzanian population in 2013. Some of the limiting factors include stringent regulations which do not allow banks to offer

unsecured loans for more than 5% of their licensed bank capital hence discouraging commercial banks downscaling to microfinance (Gallardo et al., 2005).

Other studies have shown, Microfinance banks are limited in their reach to the poor and vulnerable due to the stringent and complex laws governing the institutions, further discouraging entry of microfinance providers into the sector (Maribel et al., 2011). The authors through their book, “The new microfinance” show that, microfinance institutions charge high interest rates in compensation for lack of collateral and in some countries, such as Mexico, it is considered illegal to lend without collateral. They suggest that microfinance services should not be offered directly through banks, instead, they should be provided to the poor through group based informal financial mechanisms that also offer social collateral and which have been successfully operating in societies for generations.

iv.) Savings and Credit Cooperatives Societies (SACCOS)

Savings and Credit Cooperatives Societies (SACCOS) are operational in Tanzania. By 2013, there were 5,559 SACCOSs serving especially the rural remote areas where banks cannot reach (Tanzania National Council for Financial Inclusion, 2014). The 2006 Finscope survey found that 9% of Tanzanian adults had a loan from a SACCOS, and that women constitute 41% of SACCOS users (Ellis et al, 2007). Therefore, opportunity exists for SACCOs to reach more women and close the gender gap. The government has made efforts to include more women in SACCOSs. In 1993, a women’s development fund was established to facilitate access to commercial loans and encourage more women to participate in the economic sector. Tanzania Women Development Fund (WDF) operates in every district in the country and contributes 5% of its revenue to supporting women development groups as well as Savings and Credit Cooperatives (SACCOS).

Table 1 shows that SACCOSs are governed by the Cooperatives Societies Act of 1991. However, they are only overseen by the government for registration and cooperatives principles rather than on financial performance (Ellis et al, 2007). Due to lack of supervision, SACCOSs do not follow standard accounting procedures, thus not complying fully to audit requirements and regular required audits. Other problems include lack of professional management capacity and inability to follow requisite operational standards.

vi.) Securities

Other non-bank financial services include securities from capital markets which are still at their nascent stage in Tanzania and not playing a major role in resource mobilization. The Dar es Salaam Stock Exchange (DSE) has a total of 25 listed companies which is quite low compared to the leading stock market in Africa, Johannesburg Stock Exchange with over 400 listed companies (DSE, 2017). Although still developing, DSE is quite illiquid, making it difficult for investors to divest or sell their shares when they need to. In addition to this supply side barrier, several demand side factors such as low levels of financial literacy and lack of experience investing in the capital markets affects the uptake of these securities. As part of public education program, the DSE prints articles in the media and visits students in secondary and higher learning organisations to promote individuals investing on the DSE.

The primary benefit of investing in the stock market is to offer individuals a chance to grow their money over the long term, as prices may rise and fall in the short term. While the financial inclusion target was to have 25% of Tanzanian adults invest in securities such as shares, unit trusts, Treasury- bills and government or other bonds by 2016, only 0.1 million or 0.4% of Tanzanian adults had done so by 2014 (Financial Sector Deepening Trust, 2014). Women have been attributed to having low levels of financial literacy, therefore their participation in the capital markets is likely to be low.

vi.) Pension Funds

Pension funds (Social Security Funds), with 27% of the financial sector assets in Tanzania, represent the second largest player after banks. By limiting their investor's ability to access funds until after a certain retirement date, Pension Funds mobilise available funds for long term investment and therefore contribute substantially to development projects (World Bank, 2017). Social protection provided through social schemes can enable people to meet their basic needs even in periods of old age, maternity, sickness, and other shocks such as death and disability. Social security is a right for everyone in Tanzania, contained in the country's constitution and the Universal declaration of human rights (Social Security Regulatory Authority, 2017)

In Tanzania, there are five mandatory regulatory Social Security schemes regulated by the Social Security Regulatory Authority (SSRA) (Social Security Regulatory Authority, 2017). These institutions; GEPF Retirement benefit fund, (GEPF), LAPF pension fund, Public Service Pension Fund (PSPF), manage pension for government employees, and are one of the largest pension funds in the country. Others are the National Social Security Fund (NSSF) and the Parastatal Pension Fund (PPF) which are mandatory for public and private sector employees. The National Financial Inclusion strategy had set a target of 10% of the adult population to achieve an active pension account by 2013. Although this was not reached by 2013, 3.4% of the adult population had an account with a pension fund provider, an increase from 2.2% in 2009 (Financial Sector Deepening Trust, 2014). Fewer women than men are employed in the formal financial sector, therefore access to pension funds is likely to be lower for women.

2.5 Informal Financial Services

Financial services that are not regulated by the central bank have expanded in urban and remote rural areas serving transaction, credit, savings, and risk management needs of households, especially those underserved by the formal financial sector. Informal financial mechanisms which can be divided into Accumulating and Rotational Savings and Credit Associations (ASCAS and ROSCAS) have been operating for generations in different parts of the world known by different colloquial names. In Tanzania, they are referred to as “*upatu*” savings groups as well as ‘*kuzikana*’-funeral societies (Rivas et al., 2011). Table 1 shows informal financial services in Tanzania include Village Savings and Loans Associations (VSLAs) and Village Community Banks (VICOBAs).

VSLAs and VICOBAs, engineered versions of traditional ACSAs often found in the poorest and more rural communities, are a popular tool to encourage financial inclusion and women empowerment. NGOs such as CARE International, which pioneered the concept of VSLAs in Niger in 1991 and serves more than 20,000 informal savings groups across Tanzania, support savings societies by offering capacity building and implementation of formal rules and practice (CARE, 2016). Research of eleven communities in Tanzania shows that, individuals in most communities are members of either *upatu*, funeral society, VSLA, or VICOBA, and that most leaders in these groups have more experience today than in their parents or grandparent’s

generations (Financial Sector Deepening Trust, 2015a). VSLA members, typically women, pool their money together and make small weekly deposits into a common fund. Members save and request loans from the common fund when necessary, which they pay back with interest, thus allowing the group's deposits to earn a return. After an 8 to 12-month cycle, the group savings are shared proportional to each member's contribution, and often a new cycle begins. The main advantage of these informal groups over formal finance is the ability to access loans without collateral at relatively low interest rates since these rates are typically designed by the group.

Opportunities exist to scale up informal savings groups into formal finance and decrease the gender gap. A recent report by (Jarden, 2016) from CARE international shows that formal financial service providers in Tanzania are increasingly interested in serving the informal market due to the liquidity that the informal savings group create. According to the author, informal groups that are linked to banks, deposit US\$69-\$84 per member each year. Further, a report by (Whitehouse et al 2008) from Accenture and CARE shows that there is a US\$380 billion opportunity for banks who choose to serve the underserved individuals in emerging economies. From the customer's side, there is an increasing need to access secure and responsible savings and credit as informal savings groups grow. Overall, these prospects show the business case of scaling up informal groups to formal financial services.

On the other hand, informal mechanisms have various challenges which threaten their sustainability and contribute to their inability to scale. These challenges include; governance issues such as misuse of funds and lack of skills in areas such as record keeping, dispute resolution, and management of meetings (Financial Sector Deepening Trust, 2015a). The authors show that, majority of informal financial group members are women who have low levels of education and low financial literacy. Poor record keeping affects calculations of contributions, interest payments, and dividend payout. Given their potential to serve many, informal financial mechanisms lack innovation for more effective ways to contribute to financial inclusion.

2.6 Evolution of Mobile Money in Tanzania

Digital financial inclusion can be defined as digital access to, and use of, formal financial services by excluded and underserved populations (Consultative Group to Assist the Poor, 2015b). Wide adoption of mobile phones made electronic money wallets possible, allowing individuals to have

access to mobile money accounts on their fingertips to store value, transact, insure, and get credit. Mobile Network Operators (MNOs), banks, customers, and other digital financial solution providers are key players in the digital financial services ecosystem.

Tanzania has several providers in the ecosystem, with four large MNOs leading the mobile money industry. These providers are Vodacom (T) Ltd that pioneered the launch of “M-PESA” in 2008. Millicom (T) Ltd, Airtel and Zantel launched “Tigopesa”, Airtel Money and “Easy Pesa” in 2009 and 2010 respectively. By 2016, Tanzania had over 53 million mobile accounts of which 17.6 million were active users who had conducted at least one transaction within a 30-day window, nearly catching up to Kenya, the first country to implement successful mobile money in Africa with 20 million active users by 2016, (Communications Authority of Kenya, 2017; World Bank Group, 2017).

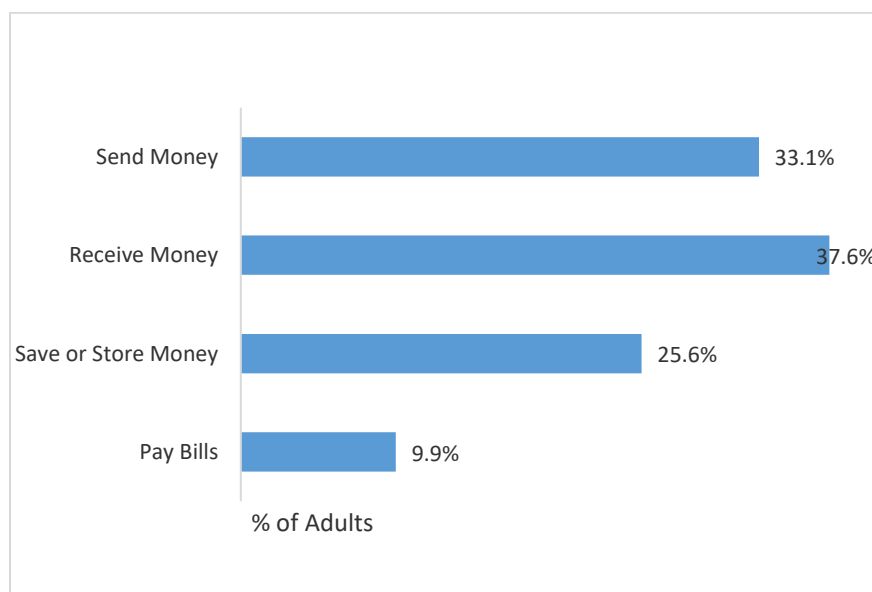
The success of mobile money in Tanzania has been attributed by several factors. Firstly, the enabling regulatory environment by the Bank of Tanzania (BoT). Table 1 shows Bank of Tanzania Act (2006) and the 2007 Electronic Payment Systems guidelines govern MNOs. These regulations permit MNOs to establish a trust account with a commercial bank partner to deposit funds which will cover mobile payments and allow them to operate. Secondly, the mobile landscape in Tanzania encourages competition whereby among the four big players, none owns more than a third of the market. The competitive environment has led to reduction in transaction costs which are lower compared to the neighbouring country Kenya, \$0.16 versus \$0.37 per mobile money transaction (World Bank Group, 2017). Thirdly, establishment of interoperability which allows for person to person transaction from one mobile network to another has promoted usage of mobile money services.

Tanzania is one of the largest users of mobile money in Africa with mobile money transactions amounting to US\$17.7 billion by 2013, catching up to Kenya, the pioneer of mobile money services in Africa, whose transactions amount to US\$21.9 billion (Consultative Group to Assist the Poor, 2015a). By 2016, the volume of transactions transferred through mobile money in Tanzania are estimated at 47% of the country’s GDP while aggregate amount deposited in trust accounts by MNOs in commercial banks, amounted to US\$9 million-almost 3% of US\$229 million total bank deposits (World Bank Group, 2017). Further, according to the World Bank Report, the

amount of loans disbursed through mobile money services are estimated at 1% of total value of bank credit. These figures represent substantial volumes within a 7-year period, since the evolution of mobile money services in Tanzania in 2009.

A range of mobile money services are provided through digital platforms in Tanzania including micro loans and savings products. Vodacom, in partnership with CBA Bank offers customers, instant unsecured micro-loans repayable through mobile phones. Savings products such as “M-Pawa” allow over 5 million customers to store up to 3 million Tanzanian Shillings (1,400 US Dollars) in their mobile wallets with interest rates ranging from 2% to 5%, almost double the rate offered by banks (3.4% in 2015) (World Bank Group, 2017). Further, “M-Kopa”, a pre-prepaid solar power service provider has connected 400,000 homes to off-grid solar energy which allow individuals to pay for the energy as they use it or by accessing credit.

Figure 4: Proportion of adults using mobile money services per type of activity



Source: Finscope Survey Report 2013 (Financial Sector Deepening Trust, 2014).

Figure 4 above presents usage of mobile money services by individuals in Tanzania. The graph shows, mobile money accounts are mostly used to receive money (37.6%) followed by sending money (33.1%). This shows that mobile money services are mostly used for cash in cash out services, posing several benefits but depicting the need for incorporating more transactions. Tanzanians located in over 200 countries worldwide can now send money through international

remittance companies such as MoneyGram and World Remit to mobile money account holders in the country who receive it without additional charges (World Bank Group, 2017). Further, Figure 4 shows how mobile money has encouraged saving for 25.6% of Tanzanian adults and facilitated 9.9% to pay bills, fees, and make business transactions. A GSMA (2017) study shows, more women use mobile money services mostly for Person to Person (P2P) transactions and that they are more likely to be recipients rather than senders. Hence opportunities exist to increase both frequency and sophistication of use of mobile money services for women.

Immense opportunities exist to digitize financial services for all players in the digital finance ecosystem including financial institutions, mobile money providers and financially excluded customers in Tanzania, majority of whom are women (60.6%) (Financial Sector Deepening Trust, 2014). For banks, building bank branches is expensive and often unprofitable. Digital transaction platforms therefore offer the opportunity to extend beyond the traditional bank coverage to include customers in rural areas which are characterized by low population density and poor infrastructure (Masamila, 2014). A study by Manyika et al. 2016) from McKinsey which quantifies the impact of digital finance globally shows, providers of financial services can save up to US\$ 400 billion annually in direct costs by shifting from traditional to digital accounts.

For women, mobile money accounts offer an opportunity to accumulate assets, increase access to credit, and save through formal financial accounts. Tanzania Mobile Network Operators have a wealth of data on digital transactions by individuals which is being used to offer micro loans. Since access to collateral is a barrier for women's access to loans, use of mobile money services allows them to create digital payment histories hence providing digital collateral and a solution for access to credit. A credit scoring system is currently being developed that uses mobile phone data including credit scoring of microfinance loan products with potential to increase access to credit for women (Alliance for Financial Inclusion, 2016). These prospects offer a solution for women's financial inclusion.

Statistics show that, majority of those living below or just above the poverty line in Tanzania are women who borrow in small quantities (Alliance for Financial Inclusion, 2016). Mobile money accounts therefore provide payment options that match their ability to pay while increasing traceability of funds thereby encouraging safe remittance (International Telecommunication

Union, 2016). In addition to using mobile phones for communication and mobile money payments, 58% of women around the world report feeling more independent with a mobile account while other reasons include saving time and feeling safer with a mobile phone (GSMA, 2015).

Despite the benefits of mobile money, women in Tanzania fall behind men in access to, and usage of, mobile money services. According to Global Findex 2014, only 26.6% women had mobile money accounts compared to 32.4% men representing a wide gender gap of 11.8% (Alliance for Financial Inclusion, 2016). This section's review shows that opportunities to close the gender gap in financial inclusion through use of mobile money services exist, and progress is being made. Gender disaggregated data will be of paramount importance in evaluating this progress.

Conclusion

In conclusion, this subsection provides an overview of formal and informal financial services in Tanzania which include bank and non-bank financial services. It gives the contribution of each institution in achieving the financial inclusion targets. It also discusses the benefits and challenges of each institution and its potential contribution towards achieving financial inclusion for women. Gender disaggregate data are however critical in analyzing the progress made by each institution and making a case to integrate more women into the formal financial system.

2.7 Theoretical Framework

2.7.1 Definition of Concepts

Gender refers to the social, behavioral, and cultural attributes, expectations, and norms associated with being a woman or a man (World Bank, 2012b). The social constructions between men and women determine what is expected or allowed in each context and these differences can vary or change over time.

Gender equality refers to how these aspects determine how women and men relate to each other and to the resulting differences in power between them (World Bank, 2012b). Gender mainstreaming on the other hand involves integration of gender perspective into the design, preparation, monitoring and evaluation of policies. Policies, spending programs and regulatory measures apply gender lenses in order to promote equality between women and men, and combat discrimination (EIGE, 2016).

Gender gap is defined by Financial Inclusion Insights, as the difference between the percentage of men and women within certain key indicators or measures of interest (InterMedia, 2015).

Sex disaggregated data is data that is grouped based on whether an individual is a man or a woman. Data is disaggregated by sex and not by gender because it is the biological difference or the sex that is recorded (Landingham et al., 2015). The authors show that, analysis on sex disaggregated data has potential to uncover differences in the situation between men and women resulting from gender roles and expectations. The UN Data Revolution group asserts that disaggregated data is key to providing a better comparative picture of what works and helps to promote evidence-based policy making at every level. For uniformity with other studies, the rest of the study will refer to gender and sex interchangeably.

Saving, is a sacrifice of current consumption that provides for accumulation of capital which, in turn, produces additional output to potentially be used for consumption in the future (Gersovitz, 1988). The author explains how economists find several motivations for savings including; smoothing consumption, investment, and precautionary motives. Individuals save to smooth consumption because the pattern of current and prospective income receipts do not coincide with the preferred level of consumption. On the other hand, the investment motive is the desire to add

to one's estate for the benefit of one's heirs while the precautionary motive is the desire to accumulate assets through saving to meet possible emergencies, whose occurrence, nature, and timing cannot be perfectly foreseen. Modern microeconomic theories find that gender based behaviour differences influence aggregate consumption, savings, investment, and risk taking behaviour with implications on demand for finance and economic growth (Stotsky, 2006).

2.7.2 Gender Disparities and Finance

Theoretically, there are several ways to link gender disparities to finance by examining insights from theoretical models and results from empirical studies. Firstly, neo-classical microeconomic theory considers a household as a basic decision-making unit. The theory suggests that household output emanates from the household's production function which is derived from time, inputs, and that household's behaviour preference (Bouis & Peña, 1997, p.39). To account for this simplification and heterogeneity in preferences by individuals in the households, a considerable body of work applies individual's preference theory such as Schultz (1961) that suggests that "individuals invest in human wealth, that is, their children and themselves, in the same way that they would invest in nonhuman capital" (Stotsky, 2006). Studies by Blundell and Macurdy (1999), Doepke et al. (2014), and Prina et al. (2015) show that consumption behaviour of women and men differs, such that women in control of their household resources, prefer to spend more on necessities such as food, children's education, health care, and human capital of their children compared to men, and this has implications on the macroeconomic levels.

The greater propensity of women to spend on human capital raises nations' accumulation of skills and expertise, leading to an increase in levels of income and hence raising overall demand for finance. Additionally, more educated women are likely to have fewer children hence decreasing the nation's levels of dependency, improving use of finance, and contributing to economic growth. In their study Klassen and Lamanna (2009) explored this causal relationship by examining the extent to which gender gaps in education and employment (proxied by gaps in labour participation) reduce demand for finance and economic growth. Using data between 1960 and 2000 on several regions of the world, they performed cross country regression and found that gender gaps in employment account for 0.4%-0.9% point differences in annual per capita growth rates between East Asia and Sub-Saharan Africa. The study therefore suggests that, at least a 40% growth gap

between East Asia and Sub Saharan Africa in the 40 years of the study is caused by gender disparities in education (Klassen & Lamanna 2009, p. 92).

Secondly, theories on determinants of aggregate saving suggest that reasons for saving include; smoothing consumption over the life cycle of individual, precautionary purposes, and investment motives (Gersovitz, 1988). Several empirical studies have found a systematic difference in women and men's saving behaviour with implications in demand for finance and economic growth. Seguino and Floro (2003) investigated the effects of gender on aggregate savings using data from semi-industrialized countries between 1975 and 1995. The authors tested whether shifts in women's income levels, which can affect their bargaining power, would increase household's savings, and by extension, aggregate gross domestic savings. The study found that women have a greater incentive to save for smoothing consumption than men which reflects women's important role as home builders. The authors find that, as women's levels of income increase, aggregate savings increase by 0.25% of GDP. Increases in domestic savings in economies can be absorbed by the financial sector which can in turn lend to the private sector and contribute to economic growth.

A body of empirical studies shows that, providing women with access to finance can lead to positive economic outcomes. In Mali, Beaman et al. (2014) conducted a household panel survey of over 6,000 households and found that access to savings groups lead to a 30% increase in savings and a 3% increase in access to credit. In Nepal, Prina (2013) performed a field experiment where he randomly selected a sample of 1,118 females headed households in 19 slums of Nepal and provided them with basic bank accounts that had no opening, maintenance, or withdrawal fee. Then he assessed causal impact of access to bank account on the target household's saving behaviour, expenditure, income, and asset accumulation. The study found that of the 84% of women who opened an account, 80% saved, making at least two deposits in the first year. Subsequent research on the group shows that giving poor women headed households access to a savings account increased their daughter's level of schooling and education aspirations along with parent's education aspirations for their children (Chiapa et al., 2016).

2.7.3 Financial Inclusion and Development

Development theory provides useful linkages on how access to finance contributes to economic development. Aghion and Bolton (1997) illustrate this linkage through their study titled “The theory of trickle-down effect on growth and development”. The authors developed a model which shows how accumulation of wealth by the rich trickles down to the poor through participation in the capital markets hence leading to economic growth. The model shows that as the wealthy invest in high yield projects in the capital market, more funds are made available to finance a pool of smaller borrowers enabling them to invest in their own projects. Using the Kuznet curve, which shows the relationship between growth and inequality, the authors illustrate that, at the early stages of development, lending terms are favourable to lenders since capital accumulation is still low. However, when accumulation of funds is invariably high, the cost of borrowing decreases, shifting the equilibrium lending terms in favour of borrowers hence enabling the poor to grow richer, and the economy converges into a unique steady state of wealth distribution.

Galor and Zeira (1993) illustrate this theoretical linkage by connecting income distribution to economic growth through investment in human capital. They show that access to finance determines distribution of wealth in a country and in-turn, levels of income affect investment in human capital. The authors observe that, less developed nations have higher income inequalities than developed nations.

Increased participation of different segments of the economy in formal financial systems, facilitates the penetration of credit thereby strengthening the case for the government to use monetary policy to catalyse economic growth. Cecchetti & Kharroubi (2012) used data from 50 advanced and emerging economies, over a period of 19 years (1980 to 2009) to analyse the impact of finance on growth. By proxying financial sector development as private credit to GDP, the study shows the relationship between the financial sector development is positively related to economic growth which is interrelated to the stance of monetary policy and the cost of capital. That is, the more inclusive the formal financial sector is, the more effective the monetary policy in lowering the cost of capital. Lowering cost of capital through monetary policy increases investment leading to an increase in economic growth. However, the study also shows that overinvestment in finance

through human capital takes away skills that would have otherwise contributed to other sectors like research and science, and this can lower economic growth.

Recent studies have found that financially including more women results in impacts on women and businesses which have positive implications on a country's economic growth. In analyzing long term poverty and gender impacts of mobile money, Suri and Jack (2016, p. 1289) find that mobile money helped 185,000 women switch into businesses or retail as their main occupation. They posit that, by allowing greater access to formal mobile wallet credit through M-Pawa loans, reducing costs of long distance remittances, and making payments easier and safer through access to mobile money, more women could invest in productive assets. By helping women save, manage their cash flows better, and reduce high transaction costs, mobile money helped households move to invest in higher risk, higher return occupations hence inducing the shift from reliance on subsistence agriculture to small scale businesses, which contribute to economic growth.

A recent study by Manyika et al. (2016) from McKinsey Global Institute on powering inclusive growth in emerging economies has found that integrating economic activity into the formal sector can lead to more transparent, efficient, and productive economies with benefits to women SME owners. Digitizing transactions of small and medium enterprises (SMEs) reduces administrative and disbursement costs, such as high transaction fees. The study shows, converting business-related transactions to digital transactions allows SME owners to save in travel time, lost productivity, and travel costs required to conduct business. The study estimates that US\$ 3.7 trillion could be added to the GDP of emerging markets and 95 million new jobs created by 2025, the majority through higher productivity of businesses and governments.

2.8 Empirical Literature

2.8.1 Gender Gaps in Financial Inclusion

Cross-country and country level studies that have analysed the gender gap in financial inclusion in African and Asian countries reveal similar and conflicting results on gender differences in the use of financial services.

i.) Gender disparities in formal accounts and informal financial services

Several cross- country studies reveal similar findings regarding women's use of informal financial services over formal financial services. Aterido et al. (2016) analysed the gender gap in use of formal banking services and informal financial services by individuals in nine SSA countries; Botswana, Kenya, Malawi, Namibia, Rwanda, South Africa, Tanzania, Uganda and Zambia. To, measure individual's access to financial services, the study used the respective country's 2013 Finscope surveys each having up to 7,600 participants and conducted between 2004 and 2009. Using probit regression and controlling for individual level characteristics (level of income, education, geographical location, work status and other individual determinants), the study found no gender gap existing in the use of formal banking services by individuals. On the other hand, women were found to be on average 5.8% more likely to use informal financial services than men and less likely to be excluded from informal financial services.

Fanta and Mutsonziwa (2016) analysed the gender gap in financial inclusion using Finscope survey data conducted in 10 Sub-Saharan countries between 2013 and 2015. Financial inclusion in the study is proxied by variables; "have an account" implying individual has an account at a formal financial institution, "access to credit", and "access to savings" at a formal and informal financial institution. Using logistic regression, the effect of gender on account ownership was tested while controlling for variables such as age, income, marital status, employment, place of residence and education. The conditional analysis found that gender is not statistically significant to account ownership, thus implying gender alone does not determine account ownership. Rather, controlled variables, such as age, income, and education, determine account ownership. Unconditional analysis shows that while women have a lower chance of owning an account at a formal financial institution they have a higher chance of accessing informal financial services than men. Additionally, gender was found to be negatively and significantly related to bank savings and bank credit suggesting that women have a lower chance of accessing both bank savings and credit than men. However, gender was found to be neutral in access to informal credit implying no significant gender disparities when it comes to accessing informal credit.

Using data from India's National Sample Survey Organisation that covered a total of 110,800 households in rural and urban areas during the year 2013, Ghosh and Vinod (2017) analysed gender

differences in the access to and use of financial services. The study classifies an individual as having access to finance if they were availed at least one cash loan from a formal financial institution. Using a multivariate regression model to investigate gender differences in access and use of finance, the study found that female headed households in India are 8% less likely to access formal financial services and 6% more likely to access informal financial services than male headed households.

In examining the gender differences in financial inclusion for women entrepreneurs in Zimbabwe, Kairiza et al. (2017) used Finscope Survey 2012 comprising of 1,590 females and 1,360 male entrepreneurs. To measure financial inclusion in formal and informal financial services the study used an index which represented a weighted average of answers to 53 questions that the entrepreneur answered “Yes” to the knowledge and usage of various formal and informal financial services. Using the two limit Tobit regression model and Ordinary Least Squares (OLS) regression, they found that female entrepreneurs are marginally excluded from the formal financial services since they are unable to meet the requirements for formal banking institutions such as proof of residence and collateral. However, when they considered informal financial markets, they found no statistically significant association between gender and informal financial inclusion, implying that female entrepreneurs are not less or more likely to be financially excluded from informal markets than their male counterparts. This is contrary to Ghosh and Vinod (2017) who found that, females are more likely to use informal financial services. Similar to earlier studies, Kairiza et al. (2017) found that gender did not have a significant association with formal financial services, rather other individual’s characteristics such as education, age and urban location have positive and significant association with formal financial inclusion.

In their study across nine Sub-Saharan African countries (including Tanzania), Aterido et al. (2016) suggest that the use of formal financial services can be explained by a host of individual characteristics where formal and self-employed individuals, individuals with income and education, individuals who are older and those living in urban areas are more likely to use formal banking services. Additionally, owners of mobile phones are found to be more likely to use formal financial services.

ii.) Gender disparities in access to credit

In examining inequality in access to credit by vulnerable sections of society including women Rajeev et al. (2010) found that female headed households have lower access and face higher rates of interest compared to their male counterparts even when they are involved in similar economic activities. The study used data from the 59th round of India's National Sample Survey Organisation that covered 196,055 households, 11% of which were headed by females. The study found a statistically significant difference in access to credit by gender. They found that female headed households were charged higher interest rates on average compared to their male counterparts (25% versus 22%).

Using Lorenz ratio for access to credit, Rajeev et al. (2010) postulate differences within the two groups and find more inequality in access to credit within female headed households, implying that poorer women are much more discriminated against access to credit compared to their richer counterparties vis-a-vis male headed households. Further analysis using occupation-wise disaggregation finds a significant difference in access to credit between male and female headed households with the most significant gap seen amongst agricultural households. Subsequently, Rajeev & Bhattacharjee (2012) show that female headed households pay 5% points higher in interest costs and have 7% to 10% points lower access to formal sources of finance as compared with male headed households.

iii) Gender disparities in mobile money services

In their study to assess the gender gap in mobile money usage in low and middle-income countries, the Global Systems for Mobile Communications Association (GSMA) found that women are, on average, 14% less likely to own a mobile phone than men (GSMA, 2015). The study found that over 1.7 billion females in low- and middle-income countries do not own mobile phones and even when they do, a significant gender gap in mobile phone usage exists. Five top barriers to usage of mobile money services were reported by women in low and medium income countries. The cost of using mobile phones was the greatest barrier and the others were, security and harassment, quality of network or coverage of mobile network provider, agent trust, and lack of technical literacy to use mobile money services.

To better understand the mobile money gender gap, in a follow up study, the GSMA connected women and analysed demand and supply side data from two countries, Mali and Côte d'Ivoire (GSMA, 2017). To examine the gender gap, the study used a mix of big data quantitative and qualitative analysis comprised of Global Findex dataset and Financial Inclusion Insights by Intermedia as well as focus group interviews for 2000 and 1750 respondents from Mali and Côte d'Ivoire respectively. The study found that the gender gap is widest before registration due to gaps in mobile phone ownership. The primary reported barriers were poor understanding of services, perceived lack of need, and lack of money. Positive linear correlation was found between education levels, occupation, and mobile money usage, suggesting these two variables predict how likely one is to become an active mobile money user. However, the study did not find a statistically significant correlation between mobile money usage and household income levels.

On the other hand, in comparing the determinants of using mobile banking and traditional accounts, Zins and Weill (2016) found both were determined by the same factors. They found that being poorer, a woman, and having low levels of education decreased the chances of resorting to a mobile account and a traditionally formal account. They also found that being a woman decreased the probability of having a mobile account and owning a bank account by -1.9% and -1.7% respectively. The study therefore suggests that mobile money does not help women to be more financially included.

iv) Barriers of women's financial inclusion

As part of an evaluation for the National Financial Education Framework approved by the Government of Tanzania in 2011, the FSDT (2014) conducted a baseline study to assess financial capability of individuals in Tanzania using a nationally representative sample of 3,320 adults. Financial capability in the study was defined as the ability of individuals to act with confidence in making optimal choices of managing their money matters. Gender, age, level of education, position in the household and main source of income, were found to be statistically significantly correlated with financial capability dimensions, competencies and segments.

The study found that the rural poor segment whose majority are women (65.8%) had the lowest scores of financial capability competencies, did not know how to seek financial information (63.2%) and those with no formal education had low confidence in making financial decisions.

Women scored lower than men in financial capability dimensions such as knowledge and awareness of financial products, numeracy skills, and confidence in making financial decisions. Similarly, in financial capabilities competencies such as short and long-term planning and discipline, women scored lower than men except for awareness of financial status and information seeking. The study recommended financial literacy messages to be implemented in Tanzania. These include mathematical literacy, basic concepts and products provided by financial services such as credit, savings, and primary life insurance. Further, teaching financial planning for unexpected expenses and making provision for old age/retirement was recommended. FSDT recommended the findings to be addressed when implementing the national financial education framework.

With regards to barriers in access to credit, in their study of the legal discrimination of land in Tanzania Mhango et al. (2014) found that women were discriminated in land ownership that is usually required to access credit from banks. The author shows that, inequality in land is caused by patriarchal customs and traditions as well as poor enforcement of laws which override customary laws that undermine women's rights to land ownership. The author reports that, Tanzania's Law of Marriage Act grants women certain ownership rights, including access to property other than land, however customary laws that undermine these rights prevail within communities. Many tribes in Tanzania also tend to discriminate against women in matters of inheritance of land and it is considered taboo for daughters to inherit their parent's land. Similarly, Kairiza et al. (2017) found that in Zimbabwe, women are marginally discriminated from using financial services since they cannot meet bank requirements for collateral particularly due to cultural norms and existing land and property rights that discriminate against women.

Using World Bank's Women, Business, and the Law database Demirgüç-Kunt et al. (2013a) show that in countries where women face legal discrimination in their ability to head a household, work, choose where to live, or inherit property or are required by law to obey their husband, women are less likely than men to own an account, save, and borrow. The study also considers gender norms as quantified by the Organisation for Economic Co-operation and Development's Gender Institutions and Development database such as incidence of early marriage for women and the level of violence against women. The results confirm that gender norms are also significantly related to women's use of financial services, such that account penetration is lower in countries

where more women marry between 15 and 18 years old while in countries with laws that do not discriminate against wives and daughters with regards to inheritance, account penetration is high.

On the other hand, in their study of gender differences in financial inclusion in 11 Sub Saharan Africa countries including Tanzania, Fanta and Mutsonziwa (2016) found that women have lower bank account ownership because most of them use someone else's account. They analysed barriers to account ownership and reported that 88% of women cite lack of money as the most important reason for not having an account. Other barriers include women being less involved in household decision making, women having lower levels of financial literacy than men, remoteness of bank branches especially in Tanzania and, finally, women preferring informal providers to banks. Similarly, Fungacova and Weill (2012) investigated reasons for individuals not owning a bank account in China. They found that women cited lack of documentation and another person in the family owning an account as a barrier to inclusion.

Ellis, Lemma and Rud (2010), using data from Tanzania's Finscope survey 2009, found both men and women gave broadly similar answers on barriers to access. Although men were less likely to save because of logistical factors such as not being close to a bank, needing identification, or because of high charges, women were more likely to be deterred by lack of money or lack of understanding about how to save or where to get a loan, which suggests a lower level of financial literacy amongst women.

2.8.2 Significance of Gender in Financial Inclusion

An examination of the individual determinants of financial inclusion has been addressed in a few studies that present varying conclusions with regards to the significance of gender in determining access and uptake of financial services.

Demirgüç-Kunt et al. (2013a) performed a study to analyse gender gaps in ownership of accounts and usage of financial services using Global Financial Inclusion (Global Findex) data from 98 developing countries. In this study, financial inclusion was proxied by; ownership of a bank account, savings in the last twelve months, and credit in the last twelve months. Using a multivariate regression model, the study found a significant gender gap in the use of financial

services even after controlling for individual level characteristics including education, income, employment, and age. These results suggest that gender affects use of financial services.

These results are contrary to findings by Alterido et al. (2016) and Fanta and Mutsonziwa (2016) who found no significant relationship between gender and account ownership. Demirgüç-Kunt et al.'s (2013a) analysis shows that gender affects bank account ownership directly such that women in developing countries are less likely to own a bank account compared to their male counterparts. Furthermore, gender affects account ownership indirectly through differences in income, employment status, and level of education. The study also found a significant negative relationship between formal savings and gender implying women save less in banks and suggest this can be explained by women's low levels of account ownership, women owning fewer assets than men, and having less money. Finally, the study suggests other factors contributing to low levels of savings at a formal financial institution include women saving in smaller amounts therefore costs involved in maintaining and opening an account is high for them.

Using World Bank's Global Findex data from 2014, Zins and Weill (2016) performed probit estimations to examine the determinants of financial inclusion in 37 Africa countries. They found that being a man, older, richer, and more educated was correlated with being more financially included. The study found that, in Africa, education and income, rather than gender, are the most important individual characteristics that influence formal exclusion.

Similarly, Fungacova and Weill (2012) used probit estimations to study financial inclusion in China using Global Findex data 2012. They found that being a man, older, better educated, and having higher income are associated with being more financially included as they are positively related to having formal credit and a formal account. Using a similar methodology and data- (Global Findex dataset for 2012), Allen et al. (2016) examined how individual characteristics affect financial inclusion for 124,000 individuals across 123 countries. They found that owning and using an account is associated with being richer, older, urban, married, employed and more educated. Although gender seemed not to be significantly associated with owning an account, females were found to use accounts less frequently than males. This is contrary to findings in Demirgüç-Kunt et al. (2013) that found gender to be significantly related to the use of financial

services after controlling for individual characteristics including income, employment status and education.

Using the Global Findex data 2014 and applying a similar methodology of multivariate regression analysis to examine the individual determinants of financial inclusion Klapper and Singer (2015) found that while employment status was a significant determinant for account ownership, being a woman, poorer, less educated, and living in the rural areas makes an individual least likely to own an account. Formal savings and credit decreased with individuals who are poorer, less educated, and living in rural areas while unemployed individuals were found to save less. However, even after controlling for other individual characteristics, gender was found not to be statistically significant to savings and credit hence posing a contradiction with earlier studies.

Finally, in examining country characteristics that influence financial inclusion, Allen et al. (2016) found that greater financial inclusion is associated with lower account costs, close proximity to financial intermediaries, stronger legal rights, and more politically stable environments. However, they found that the effectiveness of policies to encourage financial inclusion varied among individual groups and that policies are less effective for women and youth.

2.8.3 Gender Gaps in Tanzania

Gender gaps in other sectors apart from the financial sector also exist in Tanzania. A report on employment levels in Tanzania captured by Employment and Earnings Survey of 2001 shows that the ratio of women to men in formal employment is 0.41 (Ellis et al., 2007). However, despite the low rate, Tanzania's statistics are higher than other Sub Sahara African (SSA) countries which had a ratio of 0.34 in year 2000, but is still significantly below East Asia (0.66) for the same period (Klassen et al., 2009). The author's show, women's participation in the labour market in East Asia grew by 15% between 1971 and 1995 leading to a narrower gap in wages which has been attributed to East Asia's economic growth.

Furthermore, inequalities in earnings in the labour market exist in Tanzania, where fewer women are formally employed and are paid lower wages than men. A study by Ellis et al. (2007) from the World Bank shows that, in manufacturing, women in Tanzania get paid at least 3.5% less than men. Majority of women in Tanzania are more involved in unpaid care work such as domestic

tasks which are time intensive and energy consuming. Other intensive work such as processing food and food crops, fetching firewood and water, and caring for the elderly is done mostly by women but this work is not recognized by the system of national accounts. Apart from having lower opportunities for employment, women in Tanzania also have lower access to productive assets, such as land, compared to their male counterparts further reducing their capacity to generate an income (Mhango et al., 2014).

Gender gaps in education have also been reported in Tanzania where the female to male ratio stands at 0.31 (Ellis et al., 2007). This disproportionate exclusion of women from education opportunities have a direct effect on the country's economic growth. The authors show that an increase of 1.2 years in average time spent in school years leads to a one percentage point increase in growth, therefore gaps in education excludes women's contribution to growth.

Further, girls who are not given opportunity to go to school, get married at a young age thereby increasing fertility rates and dependency levels. Tanzania is one of the 35 countries in the world where total fertility rate is still higher than 5 children per woman and this could contribute to low levels of development (Ellis et al., 2007). High population in underdeveloped countries hinders economic development by reducing the rate of capital formation. High fertility rates lead to an increase in the number of dependents and since majority of the population are in their nonproductive stage, they consume more than they produce. As a result, the country's level of development declines.

Further, gender gaps in economic sectors such as agriculture exist and have implications on Tanzania's economic growth potential. Lowering the gender gap in agriculture can increase agriculture output and contribute to economic development. A report by the Bill & Melinda Gates Foundation (2014) shows that 10 million women farmers in Tanzania lack access to land, seeds, fertilizer, extension services, and market access due to regulatory and cultural barriers. The impact of the loss to the economy is staggering. The authors found that, barriers to women farmer's productivity contribute to 16% agriculture productivity gaps between men and women farmers which costs Tanzania 2% in agriculture output and an estimated US\$100 million in GDP annually.

2.9 Conclusion

Literature on the gender gap in financial inclusion has steadily been growing. Cross country and individual country research have found conflicting results on determinants of gender gaps in financial inclusion. Additionally, studies on individual's determinants of financial inclusion find conflicting results on the significance of gender in financial inclusion. While these studies provide insightful findings, it is important to note inherent limitations in cross sectional studies. Firstly, significant coefficients in the pooled regression are driven by a few countries hence resulting in results that are skewed to some countries in the study group. Secondly, given that surveys are based on individuals as opposed to households, there may be reduced accuracy in terms of financial services the individual has indirect access to, via other members of the household. Of the few country level gender gap studies that have been conducted in Africa, a glaring limitation is that analysis has been largely based on female entrepreneurs, rather than individuals in household data (Kairiza et al., 2017). Following review of literature, this section also shows that gender gaps in finance and other sectors have substantial implication of reducing countries economic growth.

This study will provide analysis of determinants of gender disparities in financial inclusion. The analysis intends to provide insights into the causes of differences in use of financial inclusion by gender. Given that only few country level studies have been done on determinants of financial inclusion for individuals after the evolution on mobile money services, this study will analyse the case of Tanzania using Finscope survey data 2013. Further, the study will examine gender disparities in financial inclusion at different levels of income of respondents to determine whether gender disparities in inclusion still exists among women and men with the same levels of income. To capture the evolution of mobile money in Africa and to highlight determinants of gender disparities in usage of digital financial services, this study has included use of mobile money services as a proxy for financial inclusion.

Chapter Three: Research Methodology

3.1 Introduction

This chapter presents the research methodology behind the empirical approach assumed by the study and is organized as follows. Section two describes the data and research design that underlies the sampling approach. Section three describes the dependent and independent variables used in the estimation and provides an explanation of how the variables were prepared. Section four describes how the regression model is estimated. Section five offers a conclusion of Chapter 3 of the study.

3.2 Data and Research Design

This study uses secondary data from Tanzania's 2013 Finscope Survey conducted by Ipsos, a research company based in Tanzania, with technical support from Yakini Development Consulting (Yakini), on behalf of the Financial Sector Deepening Trust (FSDT). The National Bureau of Statistics (NBS) was responsible for the sample design, preparing the sample frame, drawing up the sample of Enumeration Areas (EAs), and weighting of the final dataset, ensuring that the dataset represented the adult population (individuals 16 years or older) of Tanzania.

3.2.1 Sampling Design

The nationally representative consumer survey is the latest one of a series of two other surveys conducted in 2006 and 2009. Yakini Consultants used a probability sampling approach known as multiple stage cluster sampling which contained three stages in sample collection to obtain 8,000 individuals who participated in the survey. In this multi-stage sampling technique, the large population of Tanzania was divided into smaller clusters, in three stages to make primary data collection manageable. The selection procedure at each stage, also known as sub-sampling is discussed below.

First stage sampling

The first stage involved identification of geographical representation through selection of enumerator areas to ensure rural, urban and regional representation. Following the Tanzania population and housing census survey which was carried out in 2012, the entire country was

divided into small geographical units known as Enumeration Areas (EAs) (National Bureau of Statistics, 2013). The EA's identified from the census were used in Finscope survey sampling process. The Probability Proportional to Size (PPS) sampling approach was applied where, the number of households in each EA is recorded before sampling then the probability of selecting is determined proportional to its size. A total of 800 enumerator areas were selected to participate in the Finscope survey 2013. One of the advantages of this PPS is that unbiased estimation is obtained using Horvitz–Thompson estimator in the case of probability proportional to size without replacement (PPSWOR) (Skinner, 2016). Unbiased estimation is key in ensuring the selected sample is representative of the population.

Second stage sampling

The second level of sampling in the Finscope Survey is conducted at household level. A list of households in each of the selected 800 EAs was compiled. Random sample selection was used to pick 10 households from the list of compiled households. Random sampling is one of the best techniques of selecting a sample from the population as it eliminates sampling bias and accurately represents the targeted households.

Third stage sampling

Finally, the third stage represented the individual level whereby Kish selection grid was used to select members within the household to participate in the survey (Financial Sector Deepening Trust, 2014). The Kish grid method uses a pre-assigned table of random numbers to select intended respondents in each of the sampled households. The list includes all individuals, 16 years or older who are members of the household. This random selection procedure further reduces selection bias of the individual who was interviewed. Selected individual's responses were finally recorded in the survey database.

3.2.2 Data Sampling Strategy

The National Bureau of Statistics (NBS) was the institution in charge of sample design, preparation of the sample frame, drawing up the sample of Enumeration Areas (EAs) and weighting of the final dataset to ensure that the dataset represented Tanzania's adult population being, individuals 16 years or older. From September to December 2013, data collection was conducted by Ipsos

where a total sample of 7,987 interviews (6,800 for the mainland, 1,187 for Zanzibar) were achieved, representing a 99.8% response rate. The fact that the Finscope data collection was carried out just after the 2012 census increases validity of the data that was collected and makes it a better representative of the population.

Data from the interview was then captured electronically using mobile phones. Quality control measures were put in place to ensure reliability of data. One of the quality control measures required using electronic data capture during the interviews. To avoid incomplete questions, the script would not allow the enumerator to move to the next question, unless a compulsory field was completed. All the above measures make a reliable database.

Finscope was originally developed by FinMark Trust to address the need for credible financial sector information that will enable policy makers and regulators respond to challenges they face to meet their financial inclusion aims, in this case, closing the gender gap (Financial Sector Deepening Trust, 2014). Additionally, the dataset has relevant information for financial service providers regarding individual's financial behavior, challenges and the services they need. Analysis on the dataset will provide strategic information to enable financial service providers to extend their reach and broaden their services to underserved women.

Finscope 2013 dataset provides various indicators of financial inclusion, permitting analysis on use of formal and informal financial services, motivation and purpose, barriers of financial inclusion and other desired analysis. The data also provides individual level information such as gender, age, level of income, and level of education that will be used in the estimations. There are several advantages of using this dataset. Re-analysing existing data can result in new findings that can help in addressing the research gap identified earlier in the study. Secondary data is also not obtrusive in nature and therefore will not change the respondent's answers.

3.3 Description of Variables

The aim of policies and strategies for financial inclusion, is to increase access to formal financial institutions through growth in uptake and usage of formal financial products and services. In line with former literature on financial inclusion including studies by Zins & Weill (2016) and Ghosh & Vinod (2017), this study focuses on four main measures of financial inclusion; formal accounts,

formal savings, formal credit, and mobile money accounts. These indicators measure both access to and usage of formal financial services.

The Tanzania National Financial inclusion framework defines those formally included as individuals 16 years older who have or use financial products or services offered by a financial service provider that is regulated and officially supervised by the central bank (Tanzania National Council for Financial Inclusion, 2014). Formally included individuals are either (i) banked, that is, have or use an account at a commercial bank or postal bank; or (ii) non-banked, that is have or use an account at a non-bank financial institution. Non-bank formal financial institutions include SACCOSs, Microfinance Institutions (MFIs), insurance companies, remittance companies, and mobile money providers. Mobile money services are part of non-bank financial services in Tanzania, regulated and supervised by the central bank. Informally included individuals on the other hand, use financial mechanisms not provided by a regulated or supervised financial institution. These institutions include VSLAs and VICOBAs. This study is focused on analyzing access to, and usage of, formal financial services by individuals, especially women.

3.3.1 Dependent Variables

Formal account: this variable refers to the fact that the individual has or uses an account with a formal financial service provider that is, either a bank or a non-bank financial institution. Ownership of a formal account is the first step towards becoming formally financially included. Usage of these accounts for transaction, savings and credit represent the depth of financial inclusion. This study therefore uses these additional indicators to analyse usage of financial services.

Formal saving: Savings is an indication of depth in usage of financial services and has been used in several studies (Fanta & Mutsonziwa, 2016; Demirgüç-Kunt & Klapper, 2012). Individuals in Tanzania can save using formal or informal financial services. A variable “*Formal savings*” was created for individuals who saved using an account at a formal financial institution, that is, bank and non- bank formal financial institution in the last 6 months (Financial Sector Deepening Trust, 2013, q. F3fii). This dummy variable is equal to one if an individual responded Yes and zero otherwise.

Formal credit: This is an indicator of whether an individual borrowed from a financial institution in the last 12 months. Survey respondents were asked to select sources of credit they used over the past 12 months. To avoid double counting, individuals who borrowed money were asked “who did you borrow the most money from?” (Financial Sector Deepening Trust, 2013, q. G4b). To determine those who borrow from formal financial institutions, a dummy variable “*Formal credit*” was created and those who borrowed from a formal financial institution were included. The dummy equals to one if the individual’s response was “yes” and zero otherwise.

Mobile money account: The dataset also has information on access to mobile money services. Respondents were asked whether they use mobile phones for handling money (Financial Sector Deepening Trust, 2013, q. J9a). A dummy variable *Mobile money account* is equal to one if the respondent answered “yes” and zero otherwise. The study also seeks to compare the use of mobile money services and use of traditional banking services therefore, a dummy variable *Bank account* was used to provide information on respondents who declare having used banking services.

To explain barriers to financial inclusion, respondents who do not have a bank account were asked the following question “What is the main reason you do not have a bank account or have stopped using a bank account?” (Financial Sector Deepening Trust, 2013,q. J2c, J9b). Similarly, to determine barriers for not using a mobile money account, individuals who do not use a mobile phone for handling money were asked, “What is the main reason you do not use mobile phone for handling money?”. For both questions, each answer is a dummy equal to one if the individual’s answer is yes to the selected reason and zero otherwise.

The 2013 Finscope survey provides answers to respondents’ savings motivation. To explain saving motivation individuals were asked, “What are you putting most money away for?” (Financial Sector Deepening Trust, 2013b, q. F5). Several answers are provided on saving motivations. Similar to literature on saving motivation (Gersovitz, 1988), this study divides the purpose for saving is into four main categories; (i) Smoothing cashflow, which includes; living expenses, education, emergencies, farming, funeral expenses, and social expenses such as weddings, (ii) Productive investment, which includes; starting a business, buying livestock or equipment for farming and buying a house, land or plot to rent or sell at a profit, (ii) Asset building, which includes; building or buying a house, plot or land for household, improving dwelling and buying

a car or household furniture, and (iv) For future which includes; “old age” or “when I am not able to work” and “providing something for my family”. The variables are dummies equal to one if a person responded “yes” and zero otherwise.

3.3.2 Explanatory Variables

Gender: is a dummy variable equal to one if respondent is a woman (Female) and zero otherwise. This is the main variable of interest since the study is on gender disparities in financial inclusion in Tanzania.

Age: this is a continuous variable representing number of years of each respondent. To control for non-linear relationships between Age and financial inclusion, “Age” is represented by two measures, one with the number of years (Age) and the second is its square (Age²). For purposes of descriptive statistics, the variable age was further categorized into young, middle age and old.

Level of Income: This refers to the amount of money earned by respondents, divided into five income quantiles. To analyse disparities in financial inclusion at different levels of income, we use four dummy variables (poorest 20%, second 20%, third 20%, fourth 20%, and richest 20%). Dummy variable poorest 20% is equal to one if the individual’s earnings per month fall under the first income quantile, zero otherwise, and the same applies for other income quintiles.

Level of Education: This variable is measured as the highest level of education the respondent has achieved. Four dummy variables were used. “No education” is equal to one if the individual has no formal education, zero otherwise. This variable was created by including respondents who reported to have no formal education. “Primary education” is equal to one if the individual has completed primary education, zero otherwise. This variable is prepared by including all those who responded to having pre-primary, some primary, completed primary, and post primary education. “Secondary education” is equal to one if the respondent has completed secondary education or post-secondary education, zero otherwise. “Tertiary education” is equal to one if the individual has completed tertiary education or higher, zero otherwise.

Employed: This variable describes whether a respondent is employed. All individuals who reported receiving salaries/wages were categorized as employed (Financial Sector Deepening Trust, 2013b, q.M2e). A dummy variable equals one if the respondent is employed and zero otherwise.

Dependent: To further understand the level of financial capacity of respondents, a dependent variable is created. A dependent is an adult, 16 years and older whose expenses are met by either a spouse, parents, children, or relatives. Individuals were asked whether they get money from household members or have household members paying their expenses. These individuals were categorized as dependents. Some of those earning a salary may have reported being dependent as they receive supplementary income from household members to cover their expenses. This phenomenon is common in Tanzania as it is cultural for women to be provided for by their spouses even when they earn their own income. This dummy variable equals one if the respondent is dependent and zero otherwise. The summarized description of the independent variables is presented in Table 2 below.

Table 2: Description of independent variables

Variables	Definition
	<i>Demographic characteristics</i>
Female	Dummy variable equal to one if respondent is Female, zero otherwise
Young	Dummy variable equal to one if respondent is young, zero otherwise
Middle age	Dummy variable equal to one if respondent is middle aged, zero otherwise
Older	Dummy variable equal to one if respondent is older, zero otherwise
	<i>Human Capital</i>
No formal education	Dummy variable equal to one if individual has no formal education, zero otherwise
Primary education	Dummy variable equal to one if individual has completed primary school or less, zero otherwise
Secondary education	Dummy variable equal to one if individual has completed secondary education, zero otherwise
Tertiary education	Dummy variable equal to one if individual has completed tertiary education or more, zero otherwise
	<i>Financial capacity</i>
Income-Poorest 20%	Dummy variable equal to one if income is in the first income quantile, zero otherwise
Income- second 20%	Dummy variable equal to one if income is in the second and third income quantile, zero otherwise
Income -fourth 20%	Dummy variable equal to one if income is in the fourth income quantile, zero otherwise
Income- richest 20%	Dummy variable equal to one if income is in the fifth income quantile, zero otherwise
Employed	Dummy variable equals to one if individual is employed, zero otherwise
Dependent	Dummy variable equals to one if individual is dependent, zero otherwise

3.4 Econometric Model

3.4.1 Logit Regression Model

In order to examine the determinants of gender disparities in financial inclusion in Tanzania, logit regression was employed, similar to Akudugu (2013) and Fanta & Mutsonziwa (2016). The threshold decision making theory proposed by Hill & Kau (1973) and Greene (2003) is used as the theoretical foundation for the analysis. The theory as it applies to this study states that, when an individual is faced with a dichotomous decision to be financially included or not, there is a reaction threshold in them which is dependent on a set of predetermined factors or stimuli. The stimulus or explanatory variable below will result in individuals to decide to or not to be financially included. This theory is explained in a mathematical equation below;

$$Y_i = \beta X_i + u_i \quad (1)$$

Where:

$Y_i = 1$, if the individual makes a choice to be financially included

$Y_i = 0$, if the individual makes a choice not to be financially included

Equation (1) represents a model with a binary choice involving an estimation of the probability of an individual adult in Tanzania being financially included (Y_i) given a set of factors (X_i) which are exogenous to the individual. Below is the mathematical representation

$$P(Y_i = 1) = F(\beta_i X_i) \quad (2)$$

$$P(Y_i = 0) = 1 - F(\beta_i X_i) \quad (3)$$

Where:

Y_i = Is the observed response of i^{th} individual adult who is either included or not included

$Y_i = 1$, If the individual is financially included in the formal financial market

$Y_i = 0$, If the individual is not financially included in the formal financial market

X_i = Is a set of independent variables such as gender, age, level of income, level of education, associated with the i^{th} individual. Which determine the probability of financial inclusion (P)

F= Is a function that may take on a normal, logistic or probability function

As explained by (Greene, 2003, p. 667) the logit model uses the logistic cumulative function to estimate the probability as follows:

$$P(Y = 1) = \frac{e^u}{1 + e^u} \quad (4)$$

$$P(Y = 0) = 1 - \frac{e^u}{1 + e^u} \quad (5)$$

Where $u = \beta'X$. Greene (2003) shows that the probability model is a regression of conditional expectations of Y on X as follows:

$$E[y | x] = 0[1 - F(\beta X)] + 1 [F(\beta X)] = F(\beta'X) \quad (6)$$

Since the model is non-linear, the parameters are not the marginal effects of the estimation, therefore one cannot interpret the magnitude of coefficients from the output of a logit regression as they would a linear regression. Instead marginal effects of the regressors, that is, how much the conditional probability of the outcome variable changes when the value of the regressor changes, holding all other regressors constant at some values, will provide the adequate interpretation. This requires equation (6) to be differentiated with respect to (X_{ij}) , resulting in equation (7) below

$$\frac{\partial P_i}{\partial X_{ij}} = \left| \frac{\lambda \beta' X}{(1 + \lambda \beta' X)^2} \right| \beta = F(\beta' X)[1 - F(\beta' X)]\beta \quad (7)$$

This study uses logit over probit model due to its mathematical convenience and simplicity as noted by Greene (2003). The logit model for our estimation is specified as follows

$$\log Pi / (1 - Pi) = \alpha_i + \beta_i X_i + \varepsilon_i \quad (8)$$

Where:

$\log Pi / (1 - Pi) = fi$ and ε_i is the error term, hence the regression model estimation below

$$fi = \alpha_i + \beta_1 gender_i + \beta_2 edu + \beta_3 inc + \beta_4 age_{i,t} + \beta_5 employ + \beta_5 dependent + \varepsilon_i \quad (9)$$

fi represents financial inclusion variable of a given individual. *gender* is the gender of the respondent; *edu* is the educational qualification of respondent; *inc* is the income of respondent, *age* is the age of respondent and *employ* is whether the individual is employed and *dependent* is whether the individual is dependent.

3.5 Research Limitations

Finscope survey data was weighted and stratified by the National Bureau of Statistics in order to be representative of the Tanzanian population, however sampling error may still arise as a sample is used as opposed to a population. Section 4 will provide the sampling error as part of the reported findings. Among the limitations of the study is the number of missing information for some variables in the dataset. Respondents were required to report their level of income earned in a month, however, among the individuals surveyed just above half of the total respondents (55.9%) responded to the question (See Table 6 on Chapter 4). Due to the large number of missing observations in the sample, the study is biased towards a few respondents and hence may not be as accurately representative of the general Tanzanian population as originally intended. Although a robust random sampling technique and probability proportion to size method were used during sub-sampling, a selection bias may still occur since the data selected is a sample and not the population, therefore parts of the target population may not have been adequately captured.

3.6 Conclusion

This chapter provided a comprehensive review of the empirical methodology to be undertaken in the study. The secondary data from Finscope survey 2013 employed in this study was discussed along with the three-stage cluster sampling approach used to select the sample. The study uses secondary data that was collected on behalf of Financial Sector Deepening Trust (FSDT) due to its representativeness of Tanzanian population and richness in financial inclusion variables. The focus of this study is the characteristics of individuals in Tanzania who use formal financial services.

The sampling design that involves a multi stage sampling technique was used to divide the population into smaller clusters to make the primary data collection procedure manageable and reliable. The sampling design considers probabilities at the first stage when selecting the sample

of enumerator areas to be used in the study and in the second stage random sample selection used to select the households that will participate in the survey. Finally, a Kish-grid method is used to select a member of the household, 16 years and older who will participate in the survey.

Four dependent variables that measure access to, and uptake of, formal financial services are used in the estimations; formal accounts, formal savings, formal credit and mobile money accounts. The explanatory variables capture the characteristics of individuals using formal financial services, that will explain the gender disparities in financial inclusion in Tanzania. The particular individual's characteristics used in the estimation explain the gender of the respondent, their age, level of income, level of education, employment status and whether they are dependents or not.

The econometric model will be estimated using a log linear mathematical model that takes on a function whose logarithm is a linear combination of the estimated parameters. Marginal effect is the output of the regression which will provide insights on how much the conditional probability of the outcome variable changes when the value of the regressor changes, holding all other regressors constant. This logit model is used because the dependent variable has a binary output, estimating the probability of the individual being financially included or not, given a set of binary independent variables.

To finalise the chapter, research limitations are discussed, placing emphasis on issues of generalizing the analysis to the population of Tanzania. Although robust sampling techniques were employed, sampling error may still arise due to the fact that the data obtained is a sample and not the actual population. Additionally, missing data from the responses imply that the analysis will be biased to the sample of individuals that responded to certain pertinent questions such as their earnings per month.

Chapter Four: Discussion of Findings

4.1 Introduction

This chapter presents the research findings of the empirical investigation on gender discrepancies in determinants of financial inclusion in Tanzania reported in two main sections. Section two provides descriptive statistics for all financial inclusion indicators that will be used in the estimation, analysed by gender. Section three presents the results of logit estimations for determinants of financial inclusion in Tanzania, followed by determinants of gender disparities in financial inclusion. The analysis is completed by examining how these results vary for individuals across different levels of income which, in turn, explain the barriers of financial inclusion for women in each level of income. The chapter is concluded with a summary of the observations in section four.

4.2 Descriptive Statistics

Table 3 presents descriptive statistics for financial inclusion indicators used in the estimations, that is, formal account, formal savings, formal credit and mobile money account. In order to provide a comparison between usage of a mobile money account and a bank account, another indicator, bank account is also included in the descriptive statistics. To understand gender disparities in usage of formal financial service, the gender gap is calculated. Similar to Financial Inclusion Insights (FII), this study defines the gender gap as the difference between the percentage of men and women within certain key financial indicators or measures of interest (InterMedia, 2015).

Statistics from the table show, 51.9% of respondents reported having an account with a formal financial institution¹ in 2013, surpassing the government's target of attaining 50% individuals access to formal financial services by 2016 (Tanzania National Council for Financial Inclusion, 2014). However, a gender gap exists, where 10.6% of women respondents fall behind men in access to formal financial accounts.

¹ Formal financial institutions include banks and non-bank financial institutions such as insurance companies, microfinance institutions, saving and credit as and mobile money services.

Table 3: Descriptive statistics for dependent variables in the estimations

	Total		Female		Male		Gender gap
Sample size (n)	7,987		4,887		3,100		
Main financial inclusion indicators	Obs.	Percent	Obs.	Percent	Obs.	Percent	Percent
Formal account	4,147	51.9	2,338	47.8	1,809	58.4	-10.6
Formal saving	2,077	26.1	867	17.7	1,210	39.0	-21.3
Formal credit	295	3.7	165	3.4	123	4.0	-0.6
Mobile money account	3,630	45.4	2,044	41.8	1,586	51.2	-9.4
Bank account	931	11.7	428	8.8	503	16.2	-7.4
Informal accounts	3,344	41.0	1970	58.9	1,374	41.1	4.0

Source: Authors estimate from Research Data

To provide more insights on usage of formal financial services among surveyed respondents, Table 3 shows 26.1% of the respondents save with formal financial institutions while only 3.7% had formal credit. This indicates that access to formal credit in Tanzania is not commensurate with the high incidence of ownership of formal accounts. Bank credit to individuals in Tanzania is very low due to the high cost of borrowing and scarcity of credit in the country. Only 1.24 million individuals borrowed from banks as of April 2016, representing about 2% of Tanzanian population (World Bank Group, 2017). This observation however is not unique to Tanzania. Findings of a report by United Nations Capital Development Fund (UNCDF) shows that majority of bank account owners in developing countries seldom use accounts to access credit, store value, or transact and that most bank accounts are dormant (Saunders et al., 2016).

Further, findings from these descriptive statistics on Table 3 are also consistent with the study by Demugic and Klapper (2012) who observed that, while 23% of adults in Africa (less than a quarter of adult population) owned a formal account, only 5% of adults in Sub-Saharan Africa borrowed from a formal financial institution. In addition, 11.5% of the adult population in Africa saved money using a formal financial institution. Compared to the rest of Africa, findings of this study suggest that Tanzanians appear to have a higher propensity to save than the average in Africa but lower access to formal credit.

Scarcity of credit in Tanzania results from high cost of borrowing and the small asset size of the banking sector which is characterized by lack of competition whereby the biggest four banks own the lion share of the market hence limiting the ability of smaller banks to scale (World Bank Group,

2017). The authors show that banks in Tanzania are mostly involved in collecting short term deposits and contracting short term loans to relatively low risk borrowers- mainly large enterprises and government. Other contributing factors include; lack of credit bureaus which lead to information asymmetry, increased default risk and high interest rates. Another factor is the high risk-free rate which further increases the cost of lending.

Table 3 shows that almost half of the respondents, (45.4%)² reported using mobile money services to handle money. Despite the high incidence of uptake of mobile money services, a 9.4% gender gap exists (41.8% women versus 51.2% men). On the other hand, results on access to bank accounts show that, only 11.7% of respondents reported using bank services to handle money, (8.8% women and 16.2% men) representing a 7.4% gender gap. A case study by the Consultative Group to Assist the Poor (CGAP) on smallholder farmers in Tanzania shows similar results where women fall behind men in access to mobile money accounts (45% versus 52%) while a corresponding gap in bank account ownership also exists (8% women versus 11%) (Anderson, Marita, & Musiime, 2016).

These results illustrate two important findings, firstly, the increase in formal financial inclusion in Tanzania was mainly due to increase in access to mobile money service, and secondly, majority of female respondents (41%) access formal financial accounts through mobile money services. More women use mobile money services for person to person (P2P) transactions to transfer and receive payments, where majority are recipients, while men are senders (GSMA, 2017). Therefore, the country's establishment of interoperability that allows for P2P between different mobile network providers further encourage women to use mobile money services.

From the distribution of financial inclusion indicators across gender on Table 3, we observe the existence of a gender gap where women fall behind men across all three formal indicators. Firstly, 10.6% less women have access to an account at a formal financial institution than men. The gender gap in access to bank accounts is narrower than that for mobile money usage (-7.4% versus- 9.4%) respectively, implying a larger gender disparity in usage of mobile money services. Consistent with formal accounts, a wide gender gap of -21.3% exists in access to formal savings implying

² Usage of mobile money services includes sending and receiving money via a mobile phone or an agent. Respondent with access to mobile money services may also have bank account therefore overlap exist. Questions asked to respondents on usage of both financial services are discussed in Section 3

that, more women are excluded in access to formal savings due to corresponding exclusion in access to formal accounts. Only 17.7% female compared to 39% male respondents saved using formal financial institutions in the last 6 months.

On the other hand, only a small gender gap exists in access to formal credit (-0.7%) where women have lower access to credit at a formal financial institution than men, 3.4% versus 4.1% respectively. The small gender gap also suggests that women access credit from Non-Bank Financial institutions such MFIs, SACCOs and mobile money services since banks cannot advance a loan without collateral. Studies have shown that women in Tanzania have lower access to productive assets such as land and property, usually required to access credit from banks (Mhango et al., 2014) (Alliance for Financial Inclusion, 2016).

To better understand results in access to and uptake of formal financial services among surveyed respondents, analysis on usage of informal financial mechanisms was performed. Table 3 shows, just under half of surveyed respondents (41%)³ have or use informal financial accounts and of these users, women make the majority compared to men (58.9% compared to 41.1%). Informal financial services in Tanzania such as Rotating Savings and Credit Associations, commonly known as “*upatu*” have been operating for generations in Tanzania. Opportunities exist to formalize these informal mechanisms and include more women in the formal financial services.

In conclusion, analysis on access to and uptake of formal financial services shows several insights. Firstly, the increase in formal financial inclusion in Tanzania was driven by increase in usage of mobile money services. The number of women with access to a formal account and those using formal savings, formal credit and a mobile money account is lower than the number of men using similar services. The analysis on informal financial accounts also shows that women make up most users of informal accounts, suggesting that opportunity exists to convert these users to formal account users. To understand reason behind these gender gaps, Tables 4a and 4b below examine barriers to financial inclusion as reported by women and men respondents.

³ Informal accounts include percentage of surveyed respondents who reported using informal financial accounts even when they also use formal mechanisms. This variable was readily available in Finscope 2013 database

Table 4a: Barriers to using a bank account

	Total		Female		Male	
Total no of respondents	7056		4459		2597	
Does not need it - Insufficient or no money to justify it	2175	30.8%	1401	31.4%	774	29.8%
Cannot maintain the minimum balance	1581	22.4%	1029	23.1%	552	21.3%
Bank service charges are too high	207	2.9%	111	2.5%	96	3.7%
Banks are too far away	771	10.9%	365	8.2%	406	15.6%
Banking hours are not convenient	8	0.1%	2	0.0%	6	0.2%
Does not have the documentation required	158	2.2%	88	2.0%	70	2.7%
Does not know how to open a bank account	437	6.2%	305	6.8%	132	5.1%
Does not understand benefits of having a bank account	301	4.3%	206	4.6%	95	3.7%
Does not trust banks	116	1.6%	73	1.6%	43	1.7%
Banks do not provide the products or services I need	34	0.5%	17	0.4%	17	0.7%
Can get the same services elsewhere in the community	185	2.6%	129	2.9%	56	2.2%
Need permission of someone else to open it	92	1.3%	76	1.7%	16	0.6%
Feel intimidated by the bank environment	33	0.5%	17	0.4%	16	0.6%
Other reasons	958	13.6%	640	14.4%	318	12.2%

Source: Authors estimate from Research Data

Table 4a above displays the descriptive statistics for reported barriers to financial inclusion in Tanzania. Of the sample surveyed, insufficient funds and inability to maintain minimum balances are observed to be the most pronounced reasons for financial exclusion reported by 30.8% and 22.4% of respondents respectively. These findings are lower than statistics for African countries where 70.8% report “lack of money” as the main barrier to financial inclusion, implying Tanzanians are on average more financially included than other parts of Africa (Zins & Weill, 2016).

Across gender, most women respondents reported demand side barriers for usage of bank accounts. The most important barriers are “lack of money”, where 31.4% of women respondents have insufficient money to justify having an account while 23.1% of them “cannot maintain the minimum balance”. Fanta and Mutsonziwa (2016) in their study of 11 countries in Sub-Sahara Africa found, 88% of women respondents reported lack of money as the main barrier to financial inclusion. These results suggest that lack of money is the most important barrier to women’s financial inclusion.

Further, Table 4a shows, 6.2% of women do not know how to open an account and 4.2% do not understand benefits of opening an account. Other demand side barriers for women are “feeling intimidated by the bank environment” reported by 0.4% and 0.5% of female and male respondents respectively. More women than men (1.7% versus 0.6%) reported needing permission of someone else to open an account. These results suggest that women have low financial literacy, lack independence and confidence to make financial decisions. Similarly, a study by Ellis, Lemma and Rud (2010), using Finscope (2009) survey in Tanzania found that more women were deterred by lack of money and lack of understanding about how to save or where to get a loan, which suggests a persistent lower level of financial literacy amongst women from 2009 to 2013.

Similarly, women reported supply side barriers whereby (8.2% versus 15.7%) women and men respectively are deterred by banks being too far, high bank service charges (2.5% versus 3.7%), having required documentation (2% versus 2.7%) and ‘banks do not provide the products or services I need’ reported by only 0.4% women and 0.9% men). Further, more women than men reported they ‘can get services from somewhere in the community (2.9% versus 2.2%)’. These results provide several insights; (i) banks being too far is the most important supply side barrier, (ii) Stringent Know Your Customer (KYC) requirements deter women from using banking services (iii) women prefer using services in the community (iii) supply side barriers are important to women but secondary to demand side barriers (iv) Banks are expensive however very few women reported that they do not provide appropriate products for them implying demand for bank services is high.

Table 4b: Barriers to using mobile money accounts

	Total		Female		Male	
Total respondents	4089		2640		1449	
Don't have a mobile phone	2335	57.1%	1633	61.9%	702	48.4%
Don't know how to register/activate the service	469	11.5%	303	11.5%	166	11.5%
Too far from mobile money agents	302	7.4%	131	5.0%	171	11.8%
Do not have the identification documents required	95	2.3%	51	1.9%	44	3.0%
Do not trust the service	115	2.8%	69	2.6%	46	3.2%
If there is money in the phone and the phone is lost/stolen	45	1.1%	25	0.9%	20	1.4%
Have never heard of mobile money services	23	0.6%	16	0.6%	7	0.5%
The fees are too high	200	4.9%	109	4.1%	91	6.3%
Other reasons	505	12.4%	303	11.5%	202	13.9%

Source: Authors estimate from Research Data

Table 4b displays reported barriers of using mobile money services. Like banking, more women reported demand side barriers than men in mobile money account usage. A total of 61.9% of Tanzanian women in the survey do not use mobile money accounts because they do not have a mobile phone, compared to 48.4% men, representing a 13.5% gap in mobile phone ownership. In their study, Global Systems for Mobile Communications Association (GSMA) found that over 1.7 billion females in low- and middle-income countries do not own mobile phones (GSMA, 2015). Subsequently, a follow up study on the gender gap in Mali and Côte d'Ivoire found a significant gender gap exists in mobile phone ownership before registration (GSMA, 2017). Other important demand side barriers that contribute to low use of mobile money services reported by more women is “don't know how to register or use the services” (11.5%) suggesting low levels of digital skills. These results are in line with barriers in banking suggesting lack of money and low levels of digital or technical literacy as the most important barriers for women's uptake of mobile money services.

Supply side barriers are also hindering women's financial inclusion where “too far from mobile money agents” and high transaction fees were reported by (5% versus 11.8%) and (4.1% versus 6.3%) women and men, respectively. Security issues also deter women's mobile money usage where they are not sure they will access their money if the mobile phone gets lost (1.1% versus 1.4%). However, fewer women than men reported secondary barriers. These statistics show that although supply side barriers are important, there are other pertinent issues that contribute to the low usage of mobile money services by women.

In conclusion, this section's analysis finds that, more women reported demand side barriers as the primary barriers for financial inclusion while supply side barriers are secondary. The results suggest five important demand side barriers to women's financial inclusion; (i) lack of money, (ii) low levels of financial literacy, (iii) lack of independence to make financial decisions, and (iv) low levels of digital skills or technical literacy (v) lack of mobile phones. Secondary barriers include; proximity to a mobile money agent or bank, and transaction fees being too high.

In the following subsection, the study analyses differences in saving motivation between men and women. Displayed on Table 5 below is an analysis on savings motivation by gender. Theory on determinants of aggregate savings suggest that reasons for saving include smoothing consumption over the life cycle of individual, precautionary purposes, and investment motives (Gersovitz, 1988).

Table 5: Descriptive Statistics for Saving Motivation

	Total		Female		Male	
Total no of respondents	6773		4081		2692	
Smoothing cashflows						
Living expenses	4,059	59.9%	2,504	61.4%	1,555	57.8%
Hospital care/medical expenses	364	5.4%	238	5.8%	126	4.7%
An emergency other than medical	493	7.3%	309	7.6%	184	6.8%
Education or school fees	434	6.4%	274	6.7%	160	5.9%
Social reasons - Marriage/wedding expenses, bride price	30	0.4%	18	0.4%	12	0.4%
Funeral expenses	36	0.5%	17	0.4%	19	0.7%
Farming/fishing expenses (inputs)	121	1.8%	69	1.7%	52	1.9%
Productive investment						
Buying household appliances/furniture	52	0.8%	35	0.9%	17	0.6%
Building/buying a house/plot to rent out/sell for profit	91	1.3%	41	1.0%	50	1.9%
Building/buying a land/plot for farming	138	2.0%	65	1.6%	73	2.7%
Buying livestock	74	1.1%	36	0.9%	38	1.4%
Buying equipment/appliances for farming/fishing	37	0.5%	16	0.4%	21	0.8%
Starting a business	241	3.6%	160	3.9%	81	3.0%
Asset building						
Improving dwelling	129	1.9%	57	1.4%	72	2.7%
Building/buying a house/land/plot for household	209	3.1%	105	2.6%	104	3.9%
Buying means of transport (car/motorcycle/bicycle)	9	0.1%	0	0	9	0.3%
Future						
Providing something for my family after I die	19	0.3%	6	0.1%	13	0.5%
Old age or when I am not able to work	55	0.8%	26	0.6%	29	1.1%
Other reasons	182	2.7%	105	2.6%	77	2.9%

Source: Authors estimate from Research Data

Table 5 displays statistics on saving motivations for both women and men in Tanzania. The highest number of respondents save to smooth or manage living expenses (61.4% women, 57.8% men). More women save for hospital care and emergencies (5.8% and 7.6%) and these numbers are slightly higher than their male counterparts. More women save for education (6.7% versus 5.9% men) implying that they place a higher value on education and taking care of the family. Slightly less women save for funerals and farming or fishing expenses than men.

On the other hand, under the productive investment category, saving to start a business is skewed towards women (3.9% versus 3%) while more women are motivated to save in order to buy household appliances and furniture. Fewer women than men are motivated to save to build then sell for a profit (1.0% versus 1.9%) and less women save to buy livestock (0.9% compared to 1.4% men). Saving for asset building is skewed towards men where only 1.4% of women save to buy a house, plot or land, and improving dwellings, compared to 2.9% men. Saving for the future is also skewed towards men.

These findings are in line with study by Seguino and Floro (2003) which explores the differences in savings behaviour among men and women in developing countries. They suggest that women may have greater incentives to save than men largely because they must take care of greater responsibilities at home. The authors further suggest that men have an option to social insurance, which reduces their need to save for consumption smoothing. Women in Tanzania may also save due to the high degree of uncertainty in household income. Fewer women than men are employed in the formal sector, the ratio being 0.41, while the majority are employed in seasonal farming activities making their incomes inconsistent and motivating them to save to manage their consumption evenly over time (Ellis et al., 2007).

Saving habits in Tanzania are different in comparison with developed economies. Saving for old age is the main reason for saving for 40% of individuals in high income countries and 23% of individuals worldwide (Demirgüç-Kunt et al., 2015). In Tanzania, only 0.8% of the population saves for old age or retirement. Studies have shown that savings behaviour in developing countries are expected to differ systematically from that in developed countries due to several reasons. Households in developing countries tend to have extended families living with them and sharing resources hence influencing their savings behaviour. The incentive to save for old age is reduced as households expect the next generation to provide income for the older generation when they are unable to work (Gersovitz, 1988).

The conclusions to drawn from Table 4 in Tanzania is that saving behaviour between men and women differs. More women than men save for necessities being living expenses, education, and medical expenses and to start a business. On the other hand, saving for asset building such as building or buying a house is skewed towards men. A major contrast in saving behaviour between

Tanzania and the developed world is that, very few save for retirement, 0.8% of individuals in Tanzania compared to 40% of individuals in developed world.

Table 6: Descriptive Statistics of Determinants of Financial Inclusion

Sample size (n)		Total 7987	Percent 100%	Female 4887	Percent 61.2%	Male 3100	Percent 38.8%
<i>Age</i>							
Young adults	16-35 years	4503	56.4%	2968	60.7%	1535	49.5%
Middle aged	36-55 years	2504	31.4%	1444	29.5%	1060	34.2%
Older	Older than 55	980	12.3%	475	9.7%	505	16.3%
Total respondents		7987	100%	4887	61.2%	3100	38.8%
<i>Level of education</i>							
No formal education		1146	14.4%	824	16.9%	322	10.4%
Primary education		5044	63.2%	3038	66.2%	2006	64.8%
Secondary education		1670	20.9%	970	19.8%	700	22.6%
Tertiary		125	1.6%	55	1.1%	70	2.3%
Total respondents		7985	100%	4887	61.2%	3098	38.8%
<i>Levels of Income</i>							
Poorest	Less than \$1 a day	1395	31.2%	1046	37.2%	349	21.1%
Second Quintile	\$1 to \$2.5 a day	1765	39.5%	1113	39.6%	652	39.4%
Fourth Quintile	\$2.5 to \$5 a day	793	17.7%	415	14.8%	378	22.8%
Fifth Quintile	At least \$5 a day	515	11.5%	239	8.5%	276	16.7%
Total respondents		4468	55.9%	2813	57.6%	1655	53.4%
<i>Employment status</i>							
Employed		669	8.4%	296	6.1%	373	12%
Dependent		2858	35.8%	2608	53.4%	250	8.1%

Source: Authors estimate from Research Data

Table 6 displays descriptive statistics for independent variables used in the estimations. The sample size (n) represents the total number of surveyed respondents. The number of observed respondents from each variable is provided along with the proportion of female and male respondents. These variables are individual characteristics hypothesized to explain reasons behind individual's decision to be financially included.

Age

On Table 6 under the Age category, the total respondent figure shows all 7,897 individuals surveyed responded to the question, 61.2% women and 38.8% men. The Finscope data was collected just after Tanzania's 2012 census therefore statistics are proportional to census (51.3% women versus 48.7% men) (United Republic of Tanzania, 2015). To understand the make-up and disparities in age of respondents, the data was divided into three age groups; young adults, middle aged, and older. The statistics show that most of the population is made up of young adults (56.4%) and there are more younger women than men (60.7% compared to 49.5%). Less women are in their middle ages compared to men (29.5% versus 34.2%). Although women make up a higher percent of the sample, there are fewer older women compared to men. Older women make almost half the proportion of older men (9.7% versus 16.3%). These results show that the demographic factors (age) of the respondents is skewed towards women where women are the majority, younger however fewer are old.

Level of education

Respondent's level of education is categorized into four segments; (i) no primary, (ii) primary completed, (iii) secondary, and (iv) tertiary. 14.4% of respondents reported to have "no formal education", women being the majority compared to men (16.9% versus 10.4%). However, the gender gap in education seems to have closed for primary school where more women than men reported to have primary school education (66.2% versus 64.8%). These results show more women than men have no formal education however gender parity is reached in primary school level. Girls in Tanzania benefited from Julius Nyerere's legacy of Universal Primary Education (UPE) where education was provided for free in public schools. As a result, in 2004, gross primary school enrollment increased to 98.9% for girls and 102.8% boys (Ellis et al., 2007).

However, the gender gap manifests again in secondary school level where less women reported having attained secondary school education compared to men (19.8% versus 22.6%) indicating that fewer girls continue with tertiary level education. The number of respondents who have attained tertiary education is the lowest at only 1.6%, where women are fewer than men (1.1% versus 2.3%). Although the number of tertiary institutions in the country increased from a single

institution of higher education in 1961 to over 200 in 2006, only a few individuals graduate from these institutions compared to the population, the minority being women (Msolla, 2007).

Gender equity in education has been recognized in Tanzania's Development Vision 2025 which, among other things, envisages a nation that produces the quantity and quality of educated people sufficiently equipped with the requisite knowledge and skills to solve the society's problems (United Republic of Tanzania, 1999). However, according to the statistics, women have been given fewer opportunities in several fronts including education. Most recently, a decision at the national level was made not to admit pregnant girls back into public schools. Other studies have also shown that, gender inequality in education in Tanzania persists. Although girls benefited from UPE, more are excluded in tertiary levels where the female to male ratio stands at 0.31 (Ellis et al., 2007).

As seen on Table 4, women place a high value on education since they save more for education compared to men. However, they have been the most disadvantaged in receiving it. Many parents in Tanzania still believe that educating girls is not necessary as girls are expected to marry in another family and take care of their households (Mhango et al., 2014). Cultural norms and traditions contribute to the lower levels of women's education. Some tribes and customs in Tanzania require women to be married at a younger age hence reducing the time they spend in school.

In conclusion, these results show that women in Tanzania are disadvantaged when it comes to education. More women than men have no formal education. Although gender parity exists in primary education, less women than men have secondary and tertiary education. Therefore, education is skewed towards men and this disproportionate exclusion of women has implications on the country's economic development.

Levels of income

Table 6 displays results of analysis of income levels that individual respondents reported to earn in a month. Only 55.6% of individuals surveyed, responded to this question. Survey questions on level of income do not get a high response rate in Tanzania due to several reasons. Only a few people are employed therefore limiting the ability to give an accurate account of their monthly

salary. Most of those earning an income are in the informal sector where they earn daily or seasonal income. The concept of having a monthly income is therefore not common.

As part of the analysis, the dataset was divided into five equal income quintiles, each representing the individual's reported monthly income level. The first income quintile represents the poorest segment of society, earning less than \$1 a day. According to the statistics, 31.2% of the respondents belong to the poorest segment, with a larger proportion being women (37.2% women versus 21.1% men). The second segment includes all individuals earning less than \$2.5 a day which is 39.5% of the respondents, where the proportion of women and men earning this amount is almost the same (39.6% versus 39.4%).

The third quintile was omitted during analysis as it had no observations. The fourth quintile includes individuals earning more than \$2.5 but less than \$5 a day. In this quintile, the proportion of women decreases substantially to 14.8% compared to 22.8% of men. Only 11.5% of the population belong to the 5th quintile earning more than \$5 a day. Gender inequality in income is the widest in this wealthiest quintile where the number of women earning more than \$5 is almost half the number of men earning the same level of income (8.5% versus 16.7%).

These results show that most women earn less than men and are poor, earning less than \$1 a day. While gender parity exists just above the poverty line, fewer women than men earn more than \$5 a day, suggesting that fewer women are wealthy. A study by Ellis et al. (2007) from the World Bank found similar results, reporting that women in Tanzania get paid at least 3.5% less than men.

Employment status

Analysis on employment status shows only 8.4% of the total surveyed respondents are employed, receiving either a wage or salary. Gender gaps exist in employment where fewer women than men reported being employed full time or part time (6.1% versus 12%). These results are in line with other studies that found the ratio of employment between women and men is 0.41 (Ellis et al., 2007). These results suggest that women have a less stable income than men.

Apart from having lower opportunities for employment, women in Tanzania also have lower access to productive assets, such as land, compared to their male counterparts which further reduces their capacity to generate an income (Mhango et al., 2014). Further, table 6 shows, 38.5%

of the total surveyed respondents reported to be dependent on either their spouses, parents, children, or other relatives to pay their expenses, the majority being women (53.4% versus 8.1%).

In conclusion, analysis on respondent's individual characteristics shows that, women are younger and make the majority however fewer women than men make it to the older ages. While gender parity exists just above the poverty line, more women are poor, earning less than \$1 a day, fewer are wealthy, fewer are employed and more are dependent. Gender disparities in income, earnings and employment have implications in the country's economic development and are hypothesized in this study to contribute to gender gaps in access to or uptake of formal financial services.

4.3 Regression Results

This section explores whether gender differences in uptake of formal financial services still hold when controlling for other individual level characteristics. Table 7 displays results of logit estimations for main indicators of financial inclusion. Similar to Aterido et al. (2013) and Zins & Weill (2016), marginal effects of the estimations are presented. At the top of each column is a display of the dependent variables, that is, formal account, formal savings, formal credit, and mobile money account. Individual characteristics are the explanatory variables as described in Table 6 above. The number of observations is synonymous with the number of individuals who responded to the question on their earnings per month (4,468), see Table 6. Two observations were dropped during regression hence making a total number of 4,466 observations as seen on Table 7.

Table 7: Determinants of Financial Inclusion in Tanzania

	Formal account	Formal savings	Formal credit	Mobile money
Female	-0.0123 (0.016)	-0.171*** (0.014)	0.020*** (0.007)	-0.009 (0.016)
Age	0.010*** (0.003)	-0.002 (0.002)	0.011*** (0.002)	0.007** (0.003)
Age ²	-0.0001*** (0.000)	0.00002 (0.000)	-0.0001*** (0.000)	-0.0001*** (0.000)
No formal education	-0.874*** (0.203)	0.015 (0.051)	-0.085*** (0.024)	-0.515*** (0.086)
Primary education	-0.665*** (0.202)	-0.006 (0.047)	-0.035** (0.014)	-0.286*** (0.083)
Secondary education	-0.532*** (0.203)	-0.005 (0.047)	-0.013 (0.013)	-0.207** (0.084)
Poorest	-0.449*** (0.034)	-0.003 (0.023)	-0.090*** (0.013)	-0.430*** (0.029)
Second quintile	-0.332*** (0.034)	0.00002 (0.022)	-0.058*** (0.009)	-0.310*** (0.029)
Fourth quintile	-0.232*** (0.037)	-0.0005 (0.024)	-0.029*** (0.008)	-0.202*** (0.032)
Employed	0.162*** (0.025)	-0.016 (0.020)	0.036*** (0.007)	0.103*** (0.024)
Dependent	-0.021 (0.016)	-0.015 (0.016)	-0.013 (0.008)	-0.018 (0.016)
Observations	4,466	4,466	4, 466	4466
Pseudo R2	0.1356	0.0393	0.1601	0.1136
Log likelihood	-748.799	-2406.816	-748.799	-2734.917

Source: Authors estimate from Research Data

Variables; tertiary education and fifth quintile were omitted due to multicollinearity. Third quintile was joined with second quintile due to missing observations. Robust standard errors are presented in brackets.

*Significance at the 10% level

**Significance at the 5% level

*** Significance at the 1% level

i) Gender and formal account ownership

Results on Table 7 above show the female dummy has no significant relationship with formal account ownership implying that, when controlling for other individual characteristics, being female does not affect access to an account at a formal financial institution. These results are similar to findings by Aterido et al. (2013), Fanta and Mutsonziwa (2016), and Allen et al. (2016),

who find gender to not be significantly associated with owning a formal account. Similarly, Zins & Weill (2016) found gender is not the most important explanation of formal exclusion in Africa.

Age enters the model positively and significantly while Age² is negative and significant to formal account ownership, showing that age has a linear relationship with formal account ownership up to a certain point where it assumes a quadratic function. These results are explained by the Life-Cycle Hypothesis which posit that, wealth follows a hump shape whereby it is positive during individual's active working age and negative when they are retired (Modigliani, 1986). Therefore, as people's age increases the likelihood of being financially included increases up to a certain retirement age when their probability of financial inclusion starts declining.

Table 7 shows, lower levels of education enter the model negatively and significantly for formal account, decreasing an individual's likelihood of accessing formal account. For individuals with no formal education, their likelihood of accessing a formal account decreases by a higher magnitude compared to individuals with primary and secondary. These results are also in line with findings by Ghosh and Vinod (2017) who found that education to be significantly associated with formal finance, as the highest level of education attained by any member of the household increases, the likelihood of obtaining a formal source of finance also increases.

Income variables enter the model negatively and significantly for formal account implying that, lower levels of income decrease the individual's likelihood of accessing formal accounts. However, the chances of accessing a formal account increases as individuals move to from poorest to fourth quintile, by -44.9% and -23.2% respectively.

Employment, on the other hand, enters the model positively and significantly increases an individual's access to formal accounts by 16.2% compared to their unemployed counterparts, indicating that employment status is the most important factors among the analysed variables contributing to increasing access to formal accounts. Employed individuals are attractive to bank and non-bank financial providers as they have a reliable source of income. These results are similar to Fanta and Mutsonziwa (2016) who found employed people have a much higher chance of formal account ownership than unemployed individuals.

These results show that being a woman does not affect access to formal financial account rather, it is individual's age, level of income, level of education, and employment status are the significant factors. Employment is found to be the most important factors increasing access to formal accounts.

ii) Gender and formal savings

The female dummy enters the model negatively and significantly for formal savings indicating that being female decreases individual's likelihood of saving at a formal financial institution by 17.1% compared to their male counterparts. These results are in line with descriptive statistics that women in Tanzania have a higher propensity to save than men but have significantly lower access to formal saving, therefore save less at formal financial institutions. Descriptive statistics also show that women constitute the majority of informal accounts users. These results are similar to studies by Demirguc et al. (2013a) and Fanta & Mutsonziwa (2016) who find a significant negative relationship between formal savings and gender. Therefore, results from this analysis suggest that an individual's gender (sex) affects uptake of formal savings such that women have a lower chance than men of saving at a formal financial institution.

iii) Gender and formal credit

The female dummy is found to be highly statistically significant to formal credit with a positive coefficient indicating that being female increases an individual's likelihood to borrow from a formal financial institution by 2% compared to male counterparts. These results can be explained by the wide scope of formal financial institutions used in the study that women can borrow from and the narrow gender gap in uptake of formal credit, where women fall behind men by 0.6%. These institutions include bank and Non-Bank Financial institutions such as MFIs, SACCOs money lenders and mobile money services. Further, while bank credit may be lower for women, microfinance institutions in Tanzania target small and medium scale entrepreneurs, a majority of whom are women (54%) (Financial Sector Deepening Trust, 2012).

Findings on significance of gender in determining use of credit are in line with studies by Demirguc et al. (2013a). However, these results contradict studies by Fanta & Mutsonziwa (2016) who found gender to be negatively and significantly related with access to credit at a bank, while Ghosh &

Vinod (2017) found that female headed households in India are 8% less likely than men to be availed at least one cash loan from a formal financial institution. However, the quoted studies considered formal credit only from banking institutions while this study has included a wider selection of formal institutions being bank and non-bank financial institutions where women can get credit without collateral.

Other factors also affect individual's uptake of formal credit. Age takes on a lifecycle pattern increasing uptake of formal credit during the economically active period and decreasing it at retirement age. Lower levels of education especially "no formal education" compared to "secondary education" reduces individuals' likelihood of using formal credit by (-8.5% versus -1.5%) respectively. These results suggest that lower levels of education affect financial literacy which decreases uptake of formal credit.

Income variables enter the model negatively and significantly for formal credit implying that, individuals who earn less than \$5 a day are less likely to use formal credit than their literate counterparts. However, for the poorest segment, the likelihood of not using formal credit is higher than for those in the fourth income segment (-9% versus -2.9%). Employment enters the model positively and significantly, increasing individual's likelihood of using formal credit by 3.6%. These results suggest that employment significantly increases uptake of formal credit while lower levels of income decreases it.

iv) Gender and mobile money accounts

Being female is found to have no significant relationship with mobile money accounts, suggesting that an individual's sex does not affect their usage of mobile money accounts. This is contrary to a study by Zins and Weill (2016) who found a negative and significant relationship between being female and using a mobile money account, decreasing a woman's probability of having a mobile account by -1.9%. Another study by GSMA connected women and found that women around the world are 14% less likely to use mobile money services than their male counterparts (GSMA, 2015).

Similar to Zins and Weill (2016), the results show that Age is a significant determinant of access to mobile money and has a non-linear relationship, increasing usage of mobile money accounts up

to a certain retirement age where it starts declining. Being employed is another significant predictor increasing the likelihood of using a mobile money account.

Education is found to be a significant determinant of usage of mobile money, increasing the likelihood of using the account as individuals move to higher income levels. This is in line with findings by Zins and Weill (2016) who found secondary education to be positively associated with usage of mobile money. Women with secondary education have a lower likelihood of using mobile money than men with the same level of education.

Similarly, income levels enter the model negatively and significantly, decreasing the likelihood of using mobile money services as individual's income decreases. This finding is contrary to a study by GSMA (2017), that found no statistically significant relationship between income and usage of mobile money services. Employment on the other hand enters the model positively and significantly increasing uptake of mobile money accounts by 10.3%. This is in line with GSMA (2017) that found a positive linear correlation between education levels, occupation, and mobile money usage. These results suggest that the significant variables age, education, income, and employment predict how likely one is to become an active mobile money user.

In conclusion, these results provide several insights. First, individual's gender partly explains gender disparities in financial inclusion. Specifically, while gender is found not to affect access to accounts at a formal financial institution and uptake of mobile money, it affects usage of formal savings and formal credit. Women in Tanzania are 17.1% less likely to save with a formal financial institution, however they are 2% more likely to borrow from these institutions. Secondly, other factors such as age, level of income, and level of education significantly affect access to and usage of formal financial services. Employment is found to be the most important factors increasing individual's access to formal financial accounts as well as uptake of formal credit and mobile money services.

4.4 Determinants of Gender Gaps in Financial Inclusion

Table 8 displays logit estimations of gender disparities in determinants of financial inclusion in Tanzania. At the top of each column are the two dependent variables that is, formal savings, and formal credit that were found to have significant gender disparities in section 4.3. Individual

characteristics of females and males are the explanatory variables; age, level of income, level of education, employment, and dependency as described in Table 6. The number of observations from the regression is equal to the number of individuals who responded to the question on their monthly earnings (2813 women and 1655 men, see Table 6). A few observations were dropped.

Table 8: Determinants of Gender Disparities in Financial Inclusion

	Formal savings		Formal credit	
	Female	Male	Female	Male
Age	-0.005*** (0.003)	0.005 (0.004)	0.011*** (0.002)	0.013*** (0.003)
Age2	0.0001* (0.000)	-0.0001 (0.000)	-0.0001*** (0.000)	-0.0001*** (0.000)
No formal education	0.053 0.067	0.009 0.089	-0.09*** 0.029	-0.069*** 0.042
Primary education	0.039 0.064	-0.041 0.078	-0.034** 0.017	-0.041* 0.024
Secondary education	0.032 0.064	-0.03 0.078	-0.017 0.017	-0.009 0.023
Poorest quintile	-0.039 0.028	0.044 0.043	-0.100*** 0.015	-0.067*** 0.025
Second quintile	-0.03 0.028	0.029 0.037	-0.070*** 0.011	-0.039*** 0.015
Fourth quintile	-0.018 0.031	0.015 0.039	-0.036 0.010	-0.022 0.014
Employed	0.001 0.027	-0.031 0.033	0.010 0.010	0.065*** 0.012
Dependent	-0.021 0.015	0.045 0.048	-0.016** 0.008	-0.034 0.050
Observations	2,812	1654	2,812	1654
Pseudo R2	0.0028	0.003	0.1917	0.1923
Log likelihood	-1317.123	-1084.503	-423.163	-295.983

Source: Authors estimate from Research Data

*Significance at the 10% level

**Significance at the 5% level

*** Significance at the 1% level

i) *Formal Savings*

Age enters the model negatively and significantly indicating that, as the women grows older, her likelihood of saving decreases by 0.5%. However, Age² enters the model positively and significantly indicating that after a certain age, a woman's likelihood of saving increases by a 0.1%. Other factors are found to be statistically insignificant. These results suggest that Age is the only significant factor contributing to gender disparities in uptake of formal savings.

ii) *Formal credit*

Age enters the model positively and significantly for both women and men while Age² enters the model negatively and significantly, following a life cycle pattern. These results imply that the likelihood of using formal credit increase by almost the same percentage for both women and men during their economically active age (1.1% and 1.3% respectively). However, as they reach retirement age, their likelihood of using formal credit declines by the same percentage for both genders (0.01%). These results indicate that gender disparities in uptake of formal credit are not caused by differences in age.

Having no formal education decreases women's likelihood of using formal credit compared to their male counterparts (-9% versus -6.9%). However, primary education decreases the likelihood of women's uptake of formal credit by a lower percentage compared to their male counterparts (3.4% versus 4.1%). Descriptive statistics show that more women have no formal education. (16.9%). Having no formal education has implications in uptake of formal credit.

These results indicate that gender disparities in uptake of formal credit are caused by women having "no formal education" which decreases their financial literacy and therefore their uptake of formal credit. These findings are similar to Aterido, Beck, & Iacovone (2011) who found education to be the strongest factor in explaining the different use of formal financial services by gender, increasing access especially for women with secondary level education.

Level of income is another significant determinant of gender disparities in uptake of formal credit. Poorest women are much less likely to borrow from a formal financial institution compared to their male counterparts (-10% versus -6.7%). Similarly, women in the second quintile earning just above the poverty line (less than \$2.5 a day) are much less likely to borrow from a formal financial

institution than their male counterparts (-7% versus -3.94%). Descriptive statistics show that more women than men (76.8% versus 60.5%) earn less than \$2.5 a day. These results suggest that gender disparities in uptake of formal credit are caused by women being poorer than men.

Employment enters the model positively and significantly, increasing men's likelihood of borrowing from a formal financial institution by 6.5%. Descriptive statistics show that more men than women are employed (12% versus 6.1%). These results suggest that gender disparities in the uptake of formal credit are caused by women being less employed than men.

Dependency enters the model negatively and significantly, decreasing the likelihood of women's uptake of formal credit by 1.6%. Descriptive statistics show that more women are dependent than men (53.4% versus 8.1%). These results suggest that gender disparities in the uptake of formal credit are caused by women being more dependent than men.

In conclusion, analysis on gender disparities in financial inclusion provide further insights. An individual's age significantly contributes to gender disparities in uptake of formal saving. On the other hand, gender disparities in the uptake of formal credit result from women having "no formal education" which decreases their financial capabilities and therefore their uptake of formal credit. Other contributing factors are women being poorer and more dependent than men.

Table 9: Barriers of Financial Inclusion among the Poorest Income Segment

	Formal account		Formal Savings		Formal credit		Mobile money	
	Female	Male	Female	Male	Female	Male	Female	Male
Age	0.002	0.004**	-0.001	0.003**	0.004	0.001*	0.0003	0.002
No formal education	-0.582**	-0.540***	0.063	0.029	0.000	0.000	-0.108	-0.477
Primary education	-0.350	-0.237***	0.038	0.089	0.008	-0.038	0.107	-0.218
Secondary education	-0.272	0.000	0.000	0.000	0.000	0.000	0.1419	-0.027
Employed	0.033	0.058	-0.04	-0.010	0.009	0.032	-0.003	0.076
Dependent	-0.015	-0.093	-0.016	0.065	-0.010	0.000	0.002	-0.131*
Observations	1045	347	1041	347	843	248	1045	349
Pseudo R2	0.0271	0.0575	-477.875	0.0161	0.0501	0.1661	0.023	0.0423
Log likelihood	-676.476	-226.466	0.003	-228.603	-59.7884	-20.404	-645.498	-228.634

Source: Authors estimate from Research Data

*Significance at the 10% level

**Significance at the 5% level

*** Significance at the 1% level

Table 9 displays marginal effects of logit estimations for barriers to financial inclusion among the poorest segment of society. The poorest segment of society earns less than a dollar a day and is comprised of 1046 women and 349 men respondents (see Table 6). A few observations were dropped during regression hence resulting in fewer observed respondents in Table 9 above.

This analysis shows gender differences manifest within the poorest segment of society. Having only ‘no formal education’ is found to have significant effect on financial inclusion for both women and men in the poorest segment where it reduces their likelihood of access to accounts at a formal financial institution by -58.2% versus -54% respectively. Education increases individual’s numeracy and financial skills hence increasing their financial capabilities(FSDT, 2014) . This result suggests that most respondents in the poorest segment, especially women in, have no formal education and this is the most important factor contributing to their exclusion in the formal financial sector.

Table 10: Barriers of Financial Inclusion among the Second Segment

Second quintile	Formal account		Formal Savings		Formal credit		Mobile money	
	Female	Male	Female	Male	Female	Male	Female	Male
Age	0.001	0.002	-0.0002	0.0004	0.001***	0.001**	-0.001	-0.002**
No formal education	-0.337***	-0.505***	-0.001	-0.146	-0.120***	-0.051	-0.666**	-0.445
Primary education	-0.106***	-0.212***	0.003	-0.283	-0.069**	-0.033*	-0.371	-0.158***
Secondary education	0.000	0.000	0.035	-0.223	-0.058**	0.000	-0.32	0.000
Employed	0.211***	0.115**	0.010	-0.028	-0.011	0.055***	0.149***	0.054
Dependent	-0.057*	-0.026	-0.016	0.051	-0.016	0.000	-0.041	-0.01
Observations	1107	646	1113	652	1113	602	1113	646
Pseudo R2	-722.986	0.0589	0.0021	0.0096	0.0693	0.106	0.0359	0.0482
Log likelihood	0.0374	-405.745	-520.01	-426.43	-138.306	-87.3	-743.583	-424.777

Source: Authors estimate from Research Data

*Significance at the 10% level

**Significance at the 5% level

*** Significance at the 1% level

Table 10 displays marginal effects of logit estimations for barriers to financial inclusion among the second income segment of society. This segment of society is just above the poverty line, earning less than US\$2.5 a day. According to Table 6, 39.5% of the respondents fall under this income segment. The number of women and men reported to belong to this group (1113 women and 646 men) is synonymous to the number of observations on this analysis.

Age enters the model positively and significantly, increasing uptake of formal credit for both genders. Having no formal education and primary education enter the model negatively and significantly, however, they decrease uptake of formal accounts by a lower percentage for women compared to men (-33.7% versus -50.5%) and (-10.6% versus -21.2%) respectively. These results suggest that, less women have no formal education and more women have primary education compared to men in this segment and this decreases their likelihood of being excluded from accessing formal accounts.

On the other hand, having primary education enters the model negatively and significantly decreasing usage of formal credit by a higher percentage for women than men (-6.9% versus 3.3%). This result shows that, women in this segment are less likely to borrow from formal financial institutions because their highest level of education is primary level.

Employment enters the model positively and significantly, increasing the likelihood of women's access to formal accounts by a higher magnitude than their male counterparts (21% versus 11.5%) while increasing the likelihood of using mobile money services by 14.9% for women versus 5.4% for men. The analysis suggests that more women than men are employed in this segment, and increasing the level of employment for women will significantly increase access to formal accounts.

Therefore, in the second income segment (just above the poverty line), less women have no formal education and more women have primary education compared to their male counterparts. This decreases women's likelihood of being excluded from accessing formal accounts. However, women in this segment are less likely to borrow from formal financial institutions because their highest level of education is primary level. The analysis suggests that increasing the level of employment for women in this segment will significantly decrease the gender gap in financial services.

Table 11: Barriers to Financial Inclusion among Women in the Fourth Income Quintile

Fourth quintile	Formal account		Formal savings		Formal credit		Mobile Money	
	Female	Male	Female	Male	Female	Male	Female	Male
Age	-0.001	0.0002	-0.001	-0.001	0.001	-0.001	-0.005**	0.002*
No formal education	-0.303***	-0.206**	0.102	0.056	-0.113	-0.493	-0.198**	-0.089
Primary education	-0.136***	-0.032	0.082	0.062	-0.054	-0.275	-0.0275	-0.065
Secondary education	0.000	0.000	0.0142	0.051	-0.031	-0.27	0.000	-0.058
Employed	0.254**	0.319***	0.066	-0.06	0.04	0.161***	0.113	0.077***
Dependent	-0.042	0.253	-0.071*	0.082	-0.026	0.197	-0.067	0.043
Observations	409	368	415	378	415	378	409	378
Pseudo R2	0.0714	0.0822	0.0163	0.0042	0.0309	0.0431	0.0377	0.0703
Log likelihood	-213.313	-198.476	-195.830	-245.319	-113.999	-234.597	-246.092	-90.43

Source: Authors estimate from Research Data

*Significance at the 10% level

**Significance at the 5% level

*** Significance at the 1% level

Table 11 displays marginal effects of logit estimations for barriers of financial inclusion among women in the fourth income segment of society. A total of 415 women and 378 men are reported to belong to this segment, earning less than US\$5 a day (see Table 6). Fewer observations are displayed on Table 11 above as some were dropped during the analysis.

Age enters the model negatively and significantly decreasing access to mobile money accounts for women while increasing access to men in the same income segment (-0.5% versus 0.2%). This result suggests that the older women are less responsive to using new technology than men in this segment. These results are in line with reported barriers of financial inclusion being low levels of digital skills and technology literacy.

Having no formal education enters the model negatively and significantly for both genders, decreasing the likelihood of access to formal accounts for women at a higher percentage compared to their male counterparts, (-30.3% versus -20.6%). Having primary education as the highest level of education for women in this segment decreases their access to formal accounts by a substantially lower percent 13.6%. These results suggest that more women in this segment have “no formal education” and increasing their levels of education will significantly reduce their likelihood of exclusion in the formal financial system.

Employment enters the model positively and significantly for both genders, increasing the likelihood of women’s access to formal financial accounts albeit at a lower percentage than men (25.4% versus 31.5%). These results suggest that less women than men are employed in this segment, and increasing levels of employment will increase their access to formal accounts at a higher percentage than women in segment two (25.8% versus 21%).

Therefore, analysis of segment four suggests that women are less responsive to using new technology than men in this segment. More women in this segment have “no formal education”. Increasing their levels of education will significantly reduce their likelihood of exclusion in the formal financial system. Finally, less women than men are employed in this segment and increasing levels of employment will increase their access to formal accounts at a higher percentage than women in segment two.

Table 12: Barriers to Financial Inclusion among Women in the Fifth Quintile

5th quintile	Formal account		Formal Savings		Formal credit		Mobile money account	
	Female	Male	Female	Male	Female	Male	Female	Male
Age	0.007**	-0.001	-0.001	-0.003	0.003	0.004**	0.001	-0.002
No formal education	-0.256***	-0.141	0.024	-0.136	-0.212	0.000	-0.281***	-0.058
Primary education	-0.0986	-0.072	-0.051	-0.043	-0.096	-0.078	-0.086	-0.049
Secondary education	0.000	0.000	0.0002	-0.032	-0.050	-0.018	0.000	-0.008
Employed	0.000	0.000	-0.089	-0.021	0.081	0.176	0.09	0.162***
Dependent	0.032	0.000	0.001	-0.053	-0.011	0.000	-0.01	0.000
Observations	166	162	239	276	239	266	212	270
Pseudo R2	0.1309	0.023	0.01	0.005	0.035	0.1132	0.1021	0.0649
Log likelihood	-51.321	-61.056	-118.673	-176.147	-118.313	-102.887	-75.969	-109.124

Source: Authors estimate from Research Data

*Significance at the 10% level

**Significance at the 5% level

*** Significance at the 1% level

The results in Table 12 show marginal effects of logit estimations for barriers of financial inclusion among women in the fifth income segment. This segment earns at least US\$5 a day and are the wealthiest individuals in the sample, 239 women and 276 men (see Table 6). Similar number of observations are captured on Table 12 above, the lower numbers representing lost observations during regression.

Age enters the model positively and significantly showing that being an older woman with more income significantly increases the likelihood of having a formal account. “No formal education” enters the model negatively and significantly, implying that women who are wealthier but have no formal education are at least -25.6% and -28.1% less likely to access formal accounts and mobile money accounts respectively. Therefore, it is not enough to increase the level of income, the level of education should also increase to have more women in the wealthiest income quintile access formal financial services.

4.5 Conclusion

This chapter suggests that, being a woman does not affect access to formal accounts and mobile money services however, it reduces women's ability to access formal savings by 17%, while increasing access to formal credit by 2%. This result can be explained by women's access to Non-bank financial services such as Microfinance institutions which target women entrepreneurs. Among available formal financial services, most women use mobile money services however fewer women have mobile phones compared to men. Women have a higher propensity to save than men and are motivated to save for necessities such as living expenses, education and health care. However, most women use informal rather than formal financial services. These results suggest the potential for increasing women's use of formal financial services as demand for finance exists.

Evidence from analysis on barriers of financial inclusion show that, even when women and men earn the same levels of income, women are less likely to access formal financial services suggesting that women are discriminated beyond the financial sector. In finance, women face several barriers which can be divided into two, demand side and supply side. On the demand side, the study suggests five important barriers for women's financial inclusion ;(i) lack of money, (ii) low levels of financial literacy, (iii) lack of independence to make financial decisions, (iv) low levels of digital or technical literacy and (v) lack mobile phones. These aspects are a result of lower levels of income, low education, low employment, and high dependency rates. Being poor and having no formal education, reduces a woman's likelihood to access formal credit and formal savings by a higher percentage than men (9% versus 6.9%) and (10% versus 6.7%) respectively. Lower levels of education contribute to lower financial and digital literacy, further decreasing women's financial capability.

Employment on the other hand is the most important factor significantly increasing women's likelihood to access formal accounts by 25%, as it increases women's ability to make financial decisions. More women than men save to start a business. However, many women are found in the informal employment while those formally employed are only 6.1%. Finally, dependency significantly reduces ability to access formal credit. Similarly, on supply side, women face several

barriers to financial inclusion. These include stringent Know Your Customer requirements, proximity to financial access points, inappropriate products to meet women's needs and high fees for financial services.

Chapter Five: Conclusions and Recommendations

5.1 Introduction

This chapter concludes the study on determinants of gender disparities in financial inclusion in Tanzania. Section two provides a summary of the study, highlighting the importance of the study, and findings. Section three provides a conclusion of the study based on findings from regression results. Section four offers policy recommendations, while section five discusses avenues for future research.

5.2 Summary of the Study

Universally, the gender gap in financial inclusion is receiving more attention given the lost potential towards economic development that is being caused by the gap. The government of Tanzania recognises the importance of increasing financial inclusion for women and, among other efforts, increasing access to financial services for women. The National Financial Inclusion Council is working on including gender targets in the revised Financial Inclusion Framework (2017-2019) (Alliance for Financial Inclusion, 2016). This study analysed factors that contribute to gender disparities in uptake of formal financial services using gender disaggregated data from the Finscope survey 2013 database in order to provide insights for the upcoming framework.

Several insights have been derived from the analysis that will be beneficial to regulatory authorities, financial institutions, and various stakeholders in the National Council for Financial Inclusion including development partners who offer technical support. Tanzania's National Financial Inclusion Framework had set elaborate targets to achieve 50% access to financial services, 50% formal usage, and 25% of the adult population with two weeks' worth of formal savings by 2015. The study finds that, although the government target was surpassed by 2013 reaching 51.8%, ownership of formal accounts does not seem to have translated into usage. Further, gender gaps exist where 10.6%, 21.3%, and 0.6% of women fall behind men in accessing accounts at formal financial institutions, using formal savings and formal credit.

Conditional analysis on the hypothesised factors contributing to the gender gap provide evidence to suggest that, individual's gender is not the most important factor affecting financial inclusion. Instead, gender only affects the uptake of formal savings and formal credit but not access to formal financial accounts and mobile money accounts. Being a woman decreases the likelihood of saving while increasing the likelihood of borrowing at a formal financial institution by 17.1% and 2% respectively. Further, gender disparities in financial inclusion in Tanzania are caused by women being poorer, less educated, less employed, and more dependent than men. Therefore, a multi-stakeholder approach needs to be applied to address the gender gaps in financial inclusion.

The first stakeholder is the financial service providers, being banks and non-bank financial institutions including mobile money providers, Micro finance Institutions (MFIs), SACCOs, insurance, micro insurance, social security providers and capital market authorities. Evidence from the study finds that women are 17.1% less likely to save using formal financial services. Further, analysis finds age is the most significant factor increasing likelihood of women using formal savings. Evidence from the study suggests, financial institutions should target middle aged and older women as age significantly increases women's uptake of formal savings.

Analysis on saving motivations finds that, women have a higher propensity to save for necessities, health, education and to start a business, however more women use informal financial services. Further, many women in Tanzania use mobile money services more than any other formal financial service. These results show that women in Tanzania access formal financial services through mobile money accounts and have a high propensity to save. However, they are less likely to save at a formal financial institution and prefer saving in informal savings group. Rivas et al. (2011) find that women save more at informal savings groups because being compelled to save within a group strengthens their social ties in communities and helps them escape pressure from husbands and family, to spend instead of saving.

Opportunities exist to scale up women's informal savings groups to formal financial services by integrating digital platforms with informal savings groups, and linking those groups to formal bank or non-bank financial services such as Microfinance Institutions (MFIs). Analysis on barriers to financial inclusion show that women lack independence to make financial decisions. Therefore, mobile money accounts will provide them autonomy to make financial decisions. For banks,

having more savers will increase their customer base and deposits. According to a recent report by CARE, an international organisation that serves more than 20,000 informal savings groups across Tanzania, formal financial service providers in the country are increasingly interested in serving the informal market due to the liquidity that the informal savings group create (Jarden, 2016).

Evidence from this study suggests that being female increases a woman's likelihood of using formal credit by 2%, implying that women's demand for credit is high. Further analysis shows that gender disparities in uptake of formal credit are caused by women being poorer than men. The poorest women are much less likely to borrow from a formal financial institution compared to their male counterparts (-10% versus -6.7%). A study by Financial Sector Deepening Trust (2012) shows that, microfinance institutions in Tanzania target small and medium scale entrepreneurs, a majority of whom are women (54%). D'espallier, Guérin, & Mersland, (2011) show that, MFIs benefit from focusing on women as, when other variables are constant, women have lower portfolio at risk, lower write offs and lower credit loss provision. Therefore, opportunities exist to scale up formal credit for women through innovative Non-Bank Financial services that do not require collateral. Mobile money services are already using data from mobile money microloans to create a credit history for women. Since women are disadvantaged in access to collateral, innovative and disruptive alternatives to collateral should be encouraged through the involvement of financial technology companies.

To the public sector, evidence from the study suggests that women have lower education levels than men and this affects their uptake of formal financial services. Credit services should go hand in hand with financial literacy programs as more women have no, or lower levels of, formal education than their male counterparts, and this decreases their likelihood to access formal credit by 9%. A study by FSDT (2014) shows that individuals' education levels significantly affects their financial capabilities and hence their uptake of financial products. Women score lower than men on numeracy skills, knowledge or awareness of financial products, confidence in making financial decisions and engaging with financial institutions. Evidence from this study suggests that increasing women's levels of education will reduce their likelihood of exclusion. Therefore, closing gender gaps in education will reduce the likelihood of women's financial exclusion.

To the regulators, increasing levels of employment for women by closing the employment gap, will increase their likelihood to access formal accounts by 25.4%. Since fewer women than men are employed and more are involved in the informal sector such as micro, small and medium enterprises (MSMEs), opportunities exist to formalize women's informal occupations. This move will increase levels of formal employment hence increase access to and uptake of formal financial services.

Finally, for policy makers and regulators. Evidence from the study's analysis on barriers of financial inclusion shows that, even when women and men earn the same levels of income, women are less likely to access formal financial services. This implies that women are discriminated in other sectors that affect their uptake of formal financial services. Therefore, gender lenses need to be applied to all other sectors where gender gaps exist. Further, this study reports demand and supply side barriers to financial inclusion which also play a part in women's exclusion to financial services. More women than men reported being deterred by lack of financial literacy, low levels of digital skills and a lack of mobile phones. Therefore, financial literacy initiatives like the National Financial Education program, need to be implemented and incorporate training on digital skills.

5.3 Conclusions

Evidence from this study suggests that, women are excluded from formal financial services at higher rates than men. Further evidence from the study suggests that women in Tanzania are discriminated beyond the financial sector even when they earn the same level of income as men, and these aspects have negative consequences for their participation in the financial market. As discussed in the World Bank (2012a) report, women around the world are disadvantaged among many dimensions, including participation in the labour force and education, which has repercussions for their participation in the modern market economy, including the formal financial sector. Therefore, women must overcome higher barriers than men to be financially included. Without taking an integrated and innovative approach to apply gender lenses in finance and other sectors that affect women, the journey to advancing women's financial inclusion will be futile.

5.4 Policy Recommendations

Policies aimed at including more women in the formal financial market and closing the widening gender gap should apply gender lenses in financial services and other sectors of the economy since reducing gaps in all dimensions will also reduce gaps in financial inclusion. The study recommends policy makers to firstly, close the gender gap in employment by formalizing women's informal sectors. Secondly, increase women's levels of education by closing the gender gap in employment which will result in decreasing their likelihood of exclusion in the formal financial sector. Thirdly, increase financial education for women at all levels of income which will improve their understanding and therefore increase uptake of formal financial services. Fourth, train women on digital skills. Finally, integrate digital platforms with other financial services in order to increase women's uptake of formal financial services. Advancing access to formal credit by using innovative means will help remove barriers for women's access to finance such as lack of collateral. Similar to Duflo (2009), this study suggests that it is necessary to make policies that favour women in order to close the gender gap and contribute to greater financial inclusion. For gender mainstreaming to be effective, key stakeholders such as the Ministry of Community Development, Gender and Children should be included in the National Financial Inclusion Council in order to advance these policies.

The study recommends the Tanzania Financial Inclusion Framework (TFIF) to incorporate gender targets within all formal financial institutions, being banks and non-banking institutions. This will allow for monitoring of progress and achievement of targets. Through maintaining gender disaggregated data, financial institutions will be able to evaluate the business case to support women. Supporting initiatives to develop women's financial literacy, improve digital skills, and apply measures to reduce supply side barriers such as products that do not meet women's requirements and stringent Know Your Customer (KYC) requirements are important actions. Finally, the National Financial Inclusion Council should encourage implementation of the National Financial Education Framework which is key to improving women's financial capabilities.

5.5 Avenues for Future Studies

As discussed in section 3.5 on limitations of the study, only half of surveyed individuals responded to the question on their monthly earnings resulting in the study being skewed towards fewer individuals. The challenge of correctly capturing the wealth of respondents presents a research opportunity where future researchers could consider using other measures that adequately capture individual's wealth such as wealth index or lifestyle index. The dataset is also not large enough to make conclusive remarks based on responses on levels of income and other segments of society with few respondents such as those with tertiary education who make up only 1.1% of female respondents. Further studies should consider supplementing the data with other sources to obtain a larger stream of respondents to validate the findings. Lastly, contradictions that are found with other studies can be further investigated.

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